

Making the Connection

A Learning Strategy for Mathematics English Language Learners

Presented by

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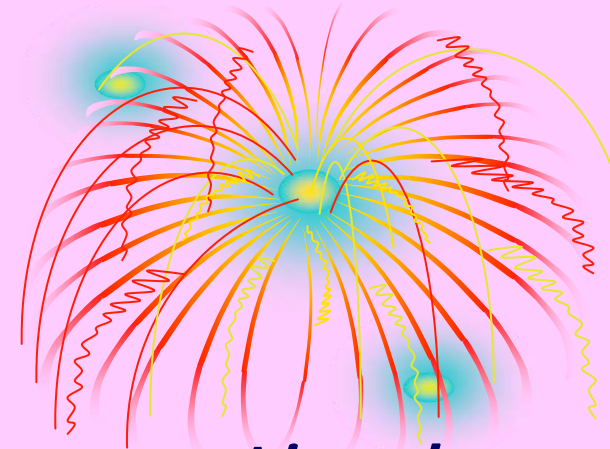
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Why are we here?



- *To describe and model practical ideas that have been tested in classrooms with ELLs.*
- *To share ideas and strategies that engage the English Language Learners in powerful learning.*

MELL-Mathematics for English Language Learners



- *Multi-year grant awarded to the TX State University System (TSUS)
---- **SHSU** is one of 5 universities*
- *Funded by the **Texas Education Agency***
- *One of **6** Mathematics initiatives in Texas*

MELL Activities

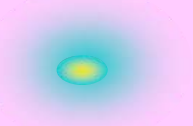


- *Provide resources and ideas to improve the mathematics learning of ELLs*
- *Support math teachers of ELL students*
 - *teachers participated in a 5-day institute focused on Mathematics content & pedagogy.*

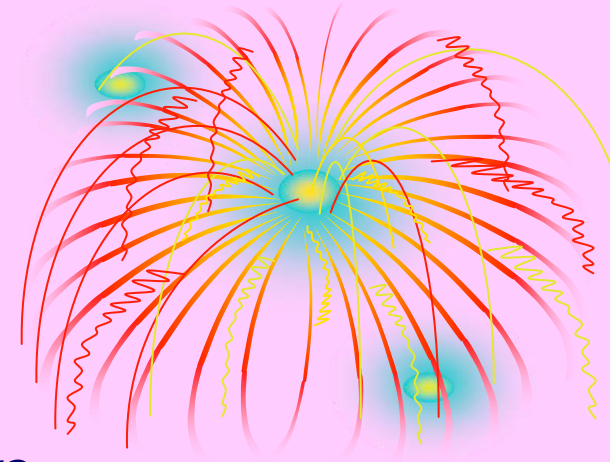
Who is the Math English Language Learners



- *Most recent immigrants*
- *Native born*
 - *Speak a native language other than English*
- *Two to three years immigrant*
 - *Has a unique cultural heritage*



The MELLs, accommodations



- *Assigned to the regular classroom in clusters*
- *Assigned to a teacher trained to handle ELL's*
- *Assigned to bilingual teachers*
- *Modify curriculum*

Concerns

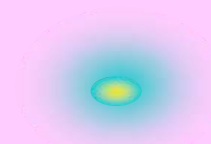
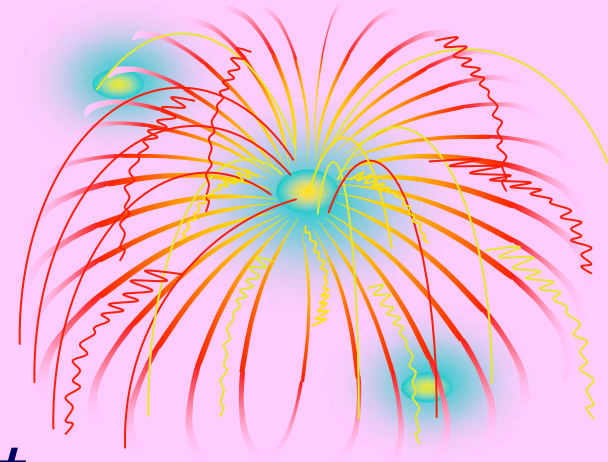
➤ *Language Development*

● *Social language*

● *academic language*

■ *math content*

■ *math language*



Strategies that work for ELLs

- *Help the ELL talk-to-learn*
 - *social language*
- *Develop academic language*
 - *vocabulary building*
- *Use of manipulatives*
 - *concrete - semi concrete*
- *Encourage the use of multiple representations*
 - *Thinking maps, graphic organizers*
- *Questioning geared towards higher order thinking*
 - *Chunking the problems*



SLOP lesson plan



- ❖ *Teaching with*

- *Language goals*
- *Content goals*

- ❖ *Based on prior knowledge*

- *Comprehensive input from the students*

- ❖ *Founded on rich vocabulary*

- *Math vocabulary emphasized and used in conversations and writing*


- ❖ *Enriched with real life application*

- *Incorporate cultural background and family values*

Language accommodation



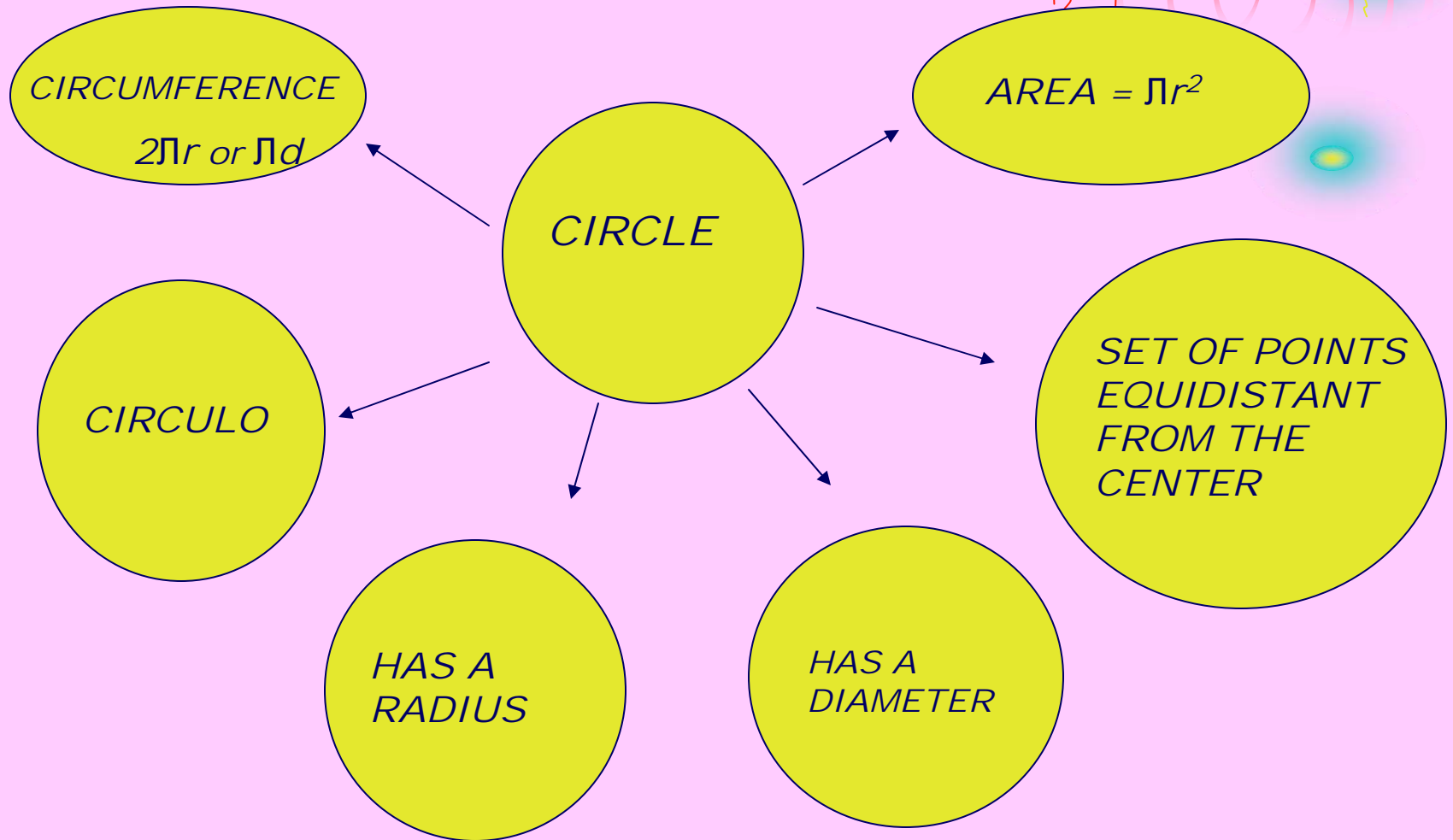
Vocabulary Building strategies

<i>English word</i>	<i>Spanish word</i>	<i>Picture</i>	<i>Description</i>
<i>circle</i>	<i>circulo</i>		<i>A set of points equally distant from the center</i>

- *List helper words and encourage students to use it to define, explain, describe in writing journals and speaking*

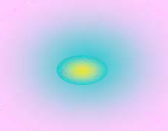
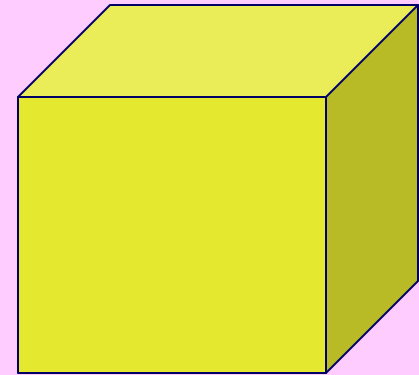
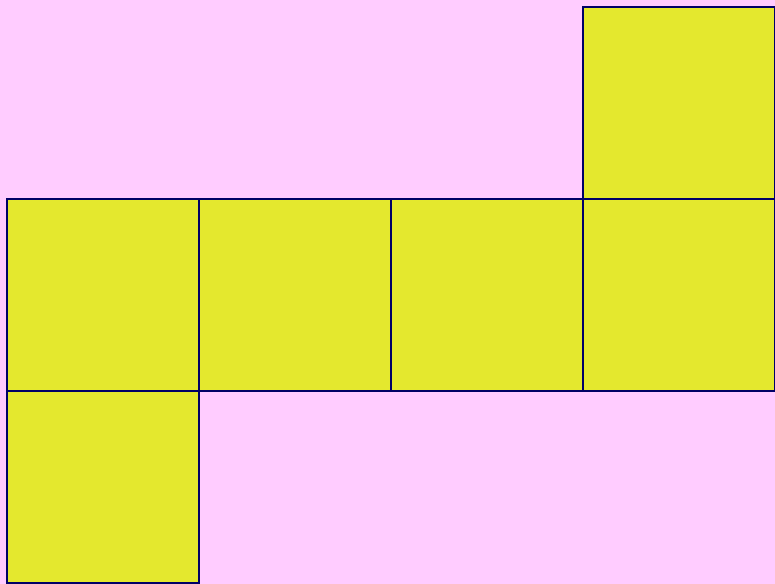
Language accommodation

- Use thinking maps



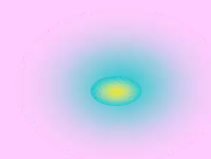
Accommodations (cont.)

Use drawings, illustrations, diagrams, or nets



Incorporate the following in language development

- *Speaking*
- *Listening*
- *Reading*
- *Writing*



Activities that enhanced powerful learning



● Hands on Geometric Transformation

➤ using patty paper

● Linking Geometric and Algebraic Transformations

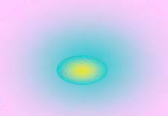
➤ using grids

● Transformations using technology

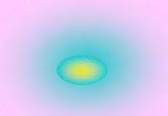
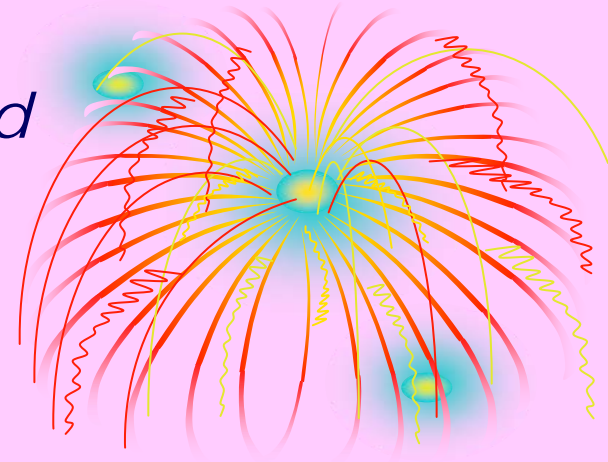
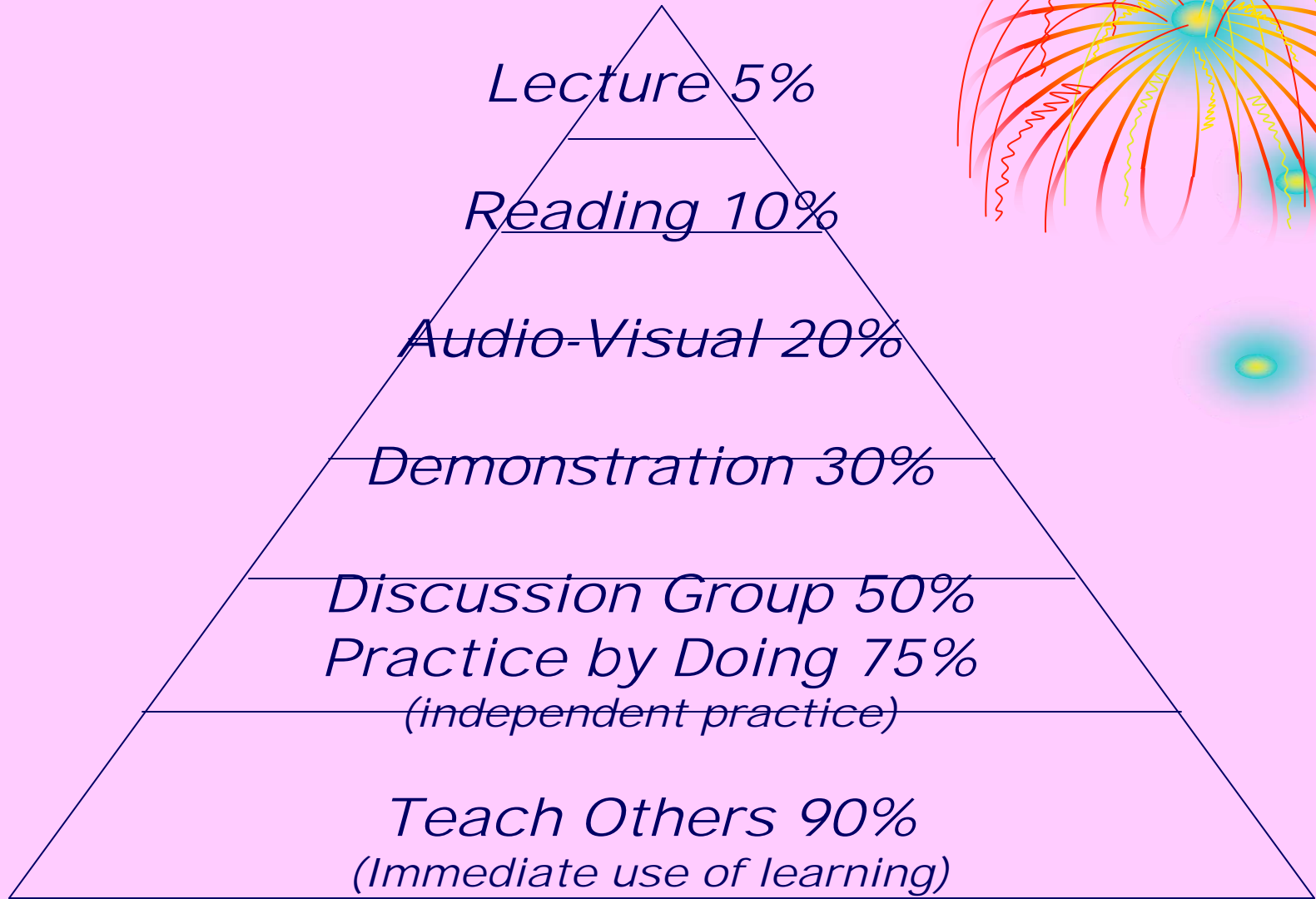
➤ Sketchpad

● Vocabulary building

➤ Vocabulary Bingo



The Learning Pyramid



Hands-on Learning enables the student to:

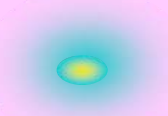


- *Explore*

- *touch*
- *manipulate*
- *design/create*
- *relate to real life*

- *Discover*

- *Make decisions*
- *Conclude*
- *Set the theory into a working knowledge*



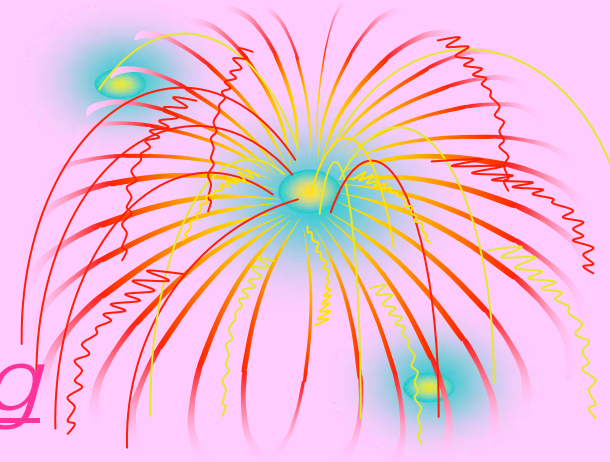
Imposing no limits

- *Allow the students to explore as much as they can [all possibilities of solving a problem]*
- *Allow the students to create their own learning strategies but you set the standards*
- *Acknowledge their ingenuity or originality*



Some Resources

- <http://www.tsusmell.org>
- *Center for applied linguistic (CAL)*
- *SIOP Model*
- *NCTM Standards*
- *Thinking Maps* (David Hyerle, Ed.D
Thinking Maps Inc)



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