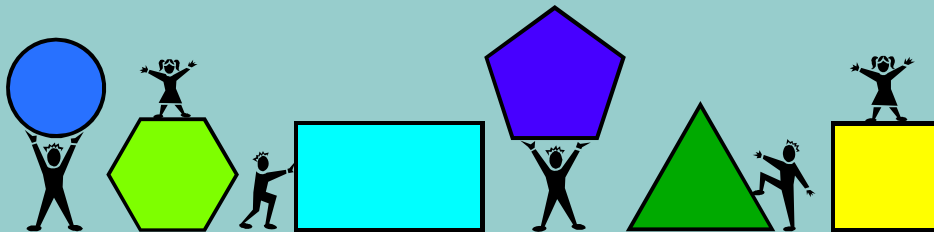


# Helping ELLs Master Vocabulary in Mathematics

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**MELL Conference**  
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# Today's Agenda

- ELL concerns
- High drop out rates
- What teachers can do

# Texas MELL Initiative

## [www.tsusmell.org](http://www.tsusmell.org)

- Funded by The Texas Education Agency –5<sup>th</sup> year of 5-year grant
- One of Six Mathematics initiatives in Texas
- Mathematics performance very low for ELLs on State assessments
- Provide free resources and ideas to improve the mathematics learning of ELLs
- Work with mathematics teachers of ELL students

# MELL Products/Resources

[www.tsusmell.org](http://www.tsusmell.org)

- Exit-level teachers guide
- MELL glossary
- MELL lessons
- MELL videos
- MELL CD
- Spanish resources
- ESC training module

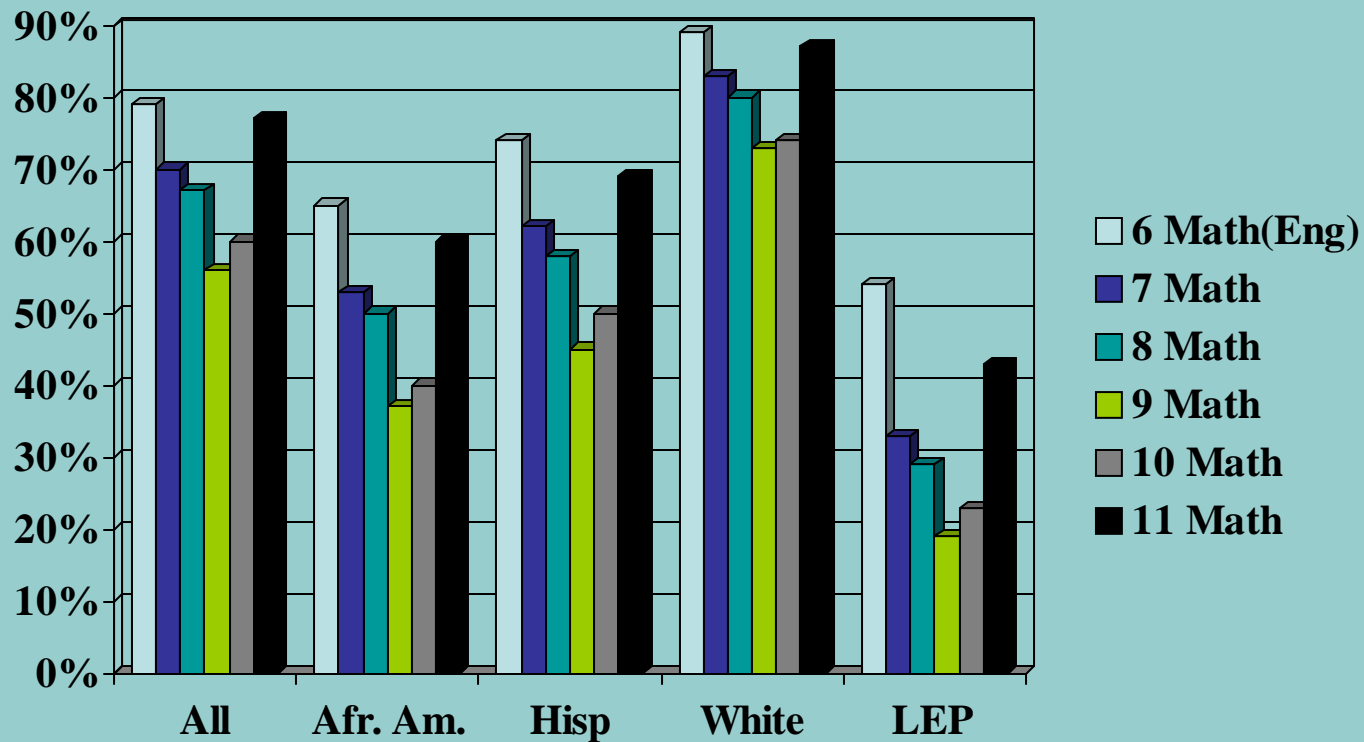
# English Language Learner Concerns

- ELL population growth in Texas
  - #LEPs grew by 48% from 1996-2006
    - 775,432 LEPs in 2007-8 school year (16%)
    - 92% of LEPs in Texas are Spanish speaking
  - Texas Hispanic population: 38% in 1998 and 45% in 2006
  - TAKS test takers 2008
    - Grades 6-9: 46% to 44% Hispanic
    - Grade 10: 41.5% Hispanic
    - Exit: 38% Hispanic

# English Language Learner Concerns

- Nationally, LEP students score 20 percentage points lower than the overall student passing rates on state tests in mathematics
- Texas ELL performance is worse

# 2006 Texas Mathematics TAKS Scores by Grade Level and Group



# 2008 TAKS Results

## Mathematics

<b>Grade</b>	<b>#LEP</b>	<b>Met Std</b>	<b>#State</b>	<b>Met Std</b>
<b>6</b>	<b>31,279</b>	<b>61%</b>	<b>317,052</b>	<b>80%</b>
<b>7</b>	<b>23,592</b>	<b>48%</b>	<b>318,800</b>	<b>76%</b>
<b>8</b>	<b>18,085</b>	<b>41%</b>	<b>309,854</b>	<b>75%</b>
<b>9</b>	<b>23,586</b>	<b>23%</b>	<b>345,916</b>	<b>60%</b>
<b>10</b>	<b>14,698</b>	<b>26%</b>	<b>293,041</b>	<b>63%</b>
<b>EXIT</b>	<b>10,708</b>	<b>43%</b>	<b>252,694</b>	<b>79%</b>

## Science

<b>Grade</b>	<b>#LEP</b>	<b>Met Std</b>	<b>#State</b>	<b>Met Std</b>
<b>8</b>	<b>17,061</b>	<b>24%</b>	<b>305,444</b>	<b>68%</b>



# English Language Learner Concerns

- From 2006 NCES data
  - High school graduation rates (started 9<sup>th</sup> grade)
    - 67% national
    - 64% Texas
    - Hispanic and African American students worse
    - What about 7<sup>th</sup> and 8<sup>th</sup> graders who drop out?
  - Low income students – 15% less likely to go to college (Texas)
  - Hispanics and African Americans less likely to return to school later

# High Dropout Rate

- Most kids who drop out struggled in middle school
- So how do we fix this?
  - Pass them on to the next grade even if they don't master the content?
  - Hold them back a year or two until they can pass the content requirements?

# Develop creative dropout intervention programs

- Increase parent involvement at early and middle grades
- Hire counselors and social workers to find dropouts and bring them back
- Help struggling students be successful
  - Catch up programs with extra support
  - Don't give up on these kids
- This is an equity issue – it impacts minority students the most

# English Language Learner Concerns

- July 2008 federal judge ruling
  - “The failure of secondary LEP students under every metric clearly and convincingly demonstrates student failure, and accordingly, the failure of the ESL secondary program in Texas” (Judge Justice)
  - The state of Texas is not complying with the federal Equal Education Opportunity Act – public schools are failing in their obligation to overcome language barriers
  - Develop plan by Jan 09, implement by Aug 09
  - State Legislature allocation of funding

# English Language Proficiency Standards

- State mandate (Texas): “all content instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student’s level of English language proficiency.”
- ELLs require “focused, targeted, and systematic second language acquisition instruction ... to support content-based instruction and accelerated learning of English.”

# English Language Proficiency Standards

- **Proficiency level descriptors example (speaking)**
  - **students have the ability to:**
    - **BEGINNING:** The student speaks using single words and short phrases with practiced material; using limited bank of key vocabulary; with recently practiced familiar material; with frequent errors that hinder communication
    - **INTERMEDIATE:** The student speaks using simple sentences/messages, basic vocabulary, present tense; frequent inaccuracies occur when creating or taking risks beyond familiar English; with errors that inhibit unfamiliar communication
    - **ADVANCED:** The student speaks using complex sentences; past, present and future tense; in conversations with some pauses to restate, repeat, and clarify; using content-based and abstract terms on familiar topics; with fewer errors that inhibit communication
    - **ADVANCED HIGH:** The student speaks in extended discussions with few pauses; using abstract content-based vocabulary except low frequency terms; using idioms; with grammar nearly comparable to native speaker; with few errors blocking communication

# What Can Teachers Do

- Step 1 – find out where your students are in both language development and mathematics knowledge
  - TELPAS ratings for each ELL student
  - Beginning and intermediate levels need your help
  - Mathematics diagnostics test or prior grade performance

# What Can Teachers Do

- Step 2 – allow extra time for ELLs to practice saying and writing the language of mathematics
  - Reading, writing, listening, speaking
  - Incorporate into mathematics lessons and word problems



# What Can Teachers Do

- Step 3 – Plan time for ELLs to discuss mathematics concepts and vocabulary with a partner
  - Speaking and listening
  - Accountable discourse

# What Can Teachers Do

- Step 4 – Have students explain and justify their understanding of mathematical vocabulary
  - Speaking and listening in small groups or whole class environment
  - Writing practice
    - Formative on language development
    - Summative on mathematical understanding
    - Ramon and Mrs. G

# What Can Teachers Do

- Step 5 – Intentionally teach vocabulary within the context of the mathematics lesson
  - Pre-teach vocabulary needed for lesson
  - Show multiple representations
    - Say the word, write the word, and associate a picture or diagram with the word

# What Can Teachers Do

- Step 5 – Intentionally teach vocabulary within the context of the mathematics lesson (Cont.)
  - Use verbal scaffolding (Sheltered Instruction)
    - Paraphrasing – restate student’s response to show correct vocabulary definitions
    - Think-alouds – show how you (the teacher) would define and use a mathematics word
    - Reinforce contextual definitions – an equilateral triangle, one with all sides and angles congruent

# What Can Teachers Do

- Step 5 – Intentionally teach vocabulary within the context of the mathematics lesson (cont.)
  - Use the mathematical register
    - Say reflection not “flip” except to provide support
    - Have students say and write mathematical definitions as much as they can using their developing English skills
    - Write word problems using mathematical words, not conversational English (and then provide support)

# Bottom Line

- Give ELLs more time
- Let ELLs work with a partner, to develop both language and mathematical skills
- Teach vocabulary as an integral part of the mathematics lesson – not just memorization of geometry terms
- Help these kids be successful