Sheltered Math Instruction for ELLs

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Objectives

- Content Objectives:
  - Understand why it's important to provide sheltered instruction for ELLs
  - Identify appropriate SIOP components to incorporate into daily lessons
  - Develop a Math lesson using SIOP template(s)
- Language Objectives:
  - To discuss the definition of sheltered instruction
  - To explain ways to help ELLs succeed in math

Key Vocabulary

- Sheltered Instruction/SIOP
- WIDA Can-Do Descriptors
- ELL Math Scaffolded Model Curriculum
- ELD Levels

English Language LEARNERS

English-language learners, or ELLs, are students who are unable to communicate fluently or learn effectively in English, who often come from non-English-speaking homes and backgrounds, and who typically require specialized or modified instruction in both the English language and in their academic courses. Bilingualism is NOT a handicap. They are just still developing English language proficiency. It is a benefit!

Genesis Assessments Tab - ACCESS

Assessment Scores

Select a view: Assessments **Select a Test:** ACCESS

Setup Link	Test	Exam	Year	Month	Sem	Grade	Language Arts	Reading	Writing	Math	Science	Score	Listening Scale Score	Speaking Scale Score	Reading Scale Score	Writing Scale Score	Comprehension Score
Setup Result File	ACCESS		2016	March		04							150	176	273	270	236
Setup Result File	ACCESS		2017	March		05							393	198	295	280	324

Writing Scale Score	Comprehension Score	Oral Scale Score	Literacy Scale Score	Composite (Overall) Scale Score	Listening Proficiency Level	Speaking Proficiency Level	Reading Proficiency Level	Writing Proficiency Level	Comprehension Proficiency Level	Oral Proficiency Level	Literacy Proficiency Level	Composite (Overall) Proficiency Level	
270	236	163	272	239	1.2	1	1.9	1.9	1.6	1.1	1.9	1.6	
280	324	296	288	290	5.6	1.5	1.8	2.5	2.5	2.5	1.9	2.1	

Genesis-Tracking Tab

ELL Tracking

Referral Date	ELL Start Date	Eligibility	Program *(includes parent refusal)*	Program Start	Exit Date	Exit Reason	Progressio
05/21/2012	09/12/2016	Found Eligible	English as a Second Language	09/12/2016			1

Participation Code:

Notes:

Exited BIL on 9/9/2016 and place in ESL services only on 9/9/2016

Referral Date	ELL Start Date	Eligibility	Program *(includes parent refusal)*	Program Start	Exit Date	Exit Reason	Progressio
05/21/2012	09/05/2012	Found Eligible	Full-Time Bilingual	09/09/2016	09/09/2016	Proficient	F1

Participation Code:

Notes:

Exited BIL on 9/9/2016 and place in ESL services only on 9/9/2016

If transferring a student from one ELL program into another, simply change the program in the dropdown box above then follow the directions on screen.

Click here for more info.

Why is he in ESL? He speaks English just fine!

- **Basic Interpersonal Communication Skills (BICS):** Usually require 1-2 years to develop
  - Example words: table, “what’s up?”
- **Cognitive Academic Language Proficiency (CALP):** Usually requires 4-7 years to develop
  - New meanings (table)
  - General academic words (act upon, attach, inquiry)
  - Content area words (molecule, diameter)

English Language Proficiency Levels

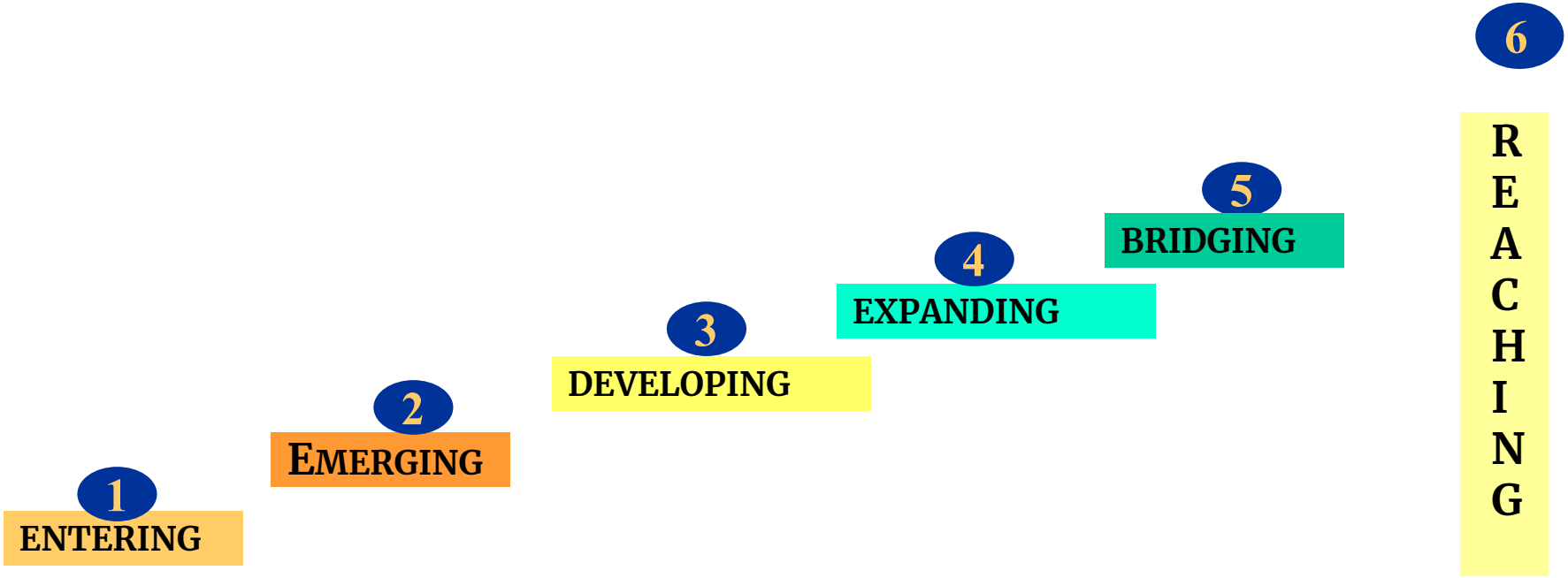


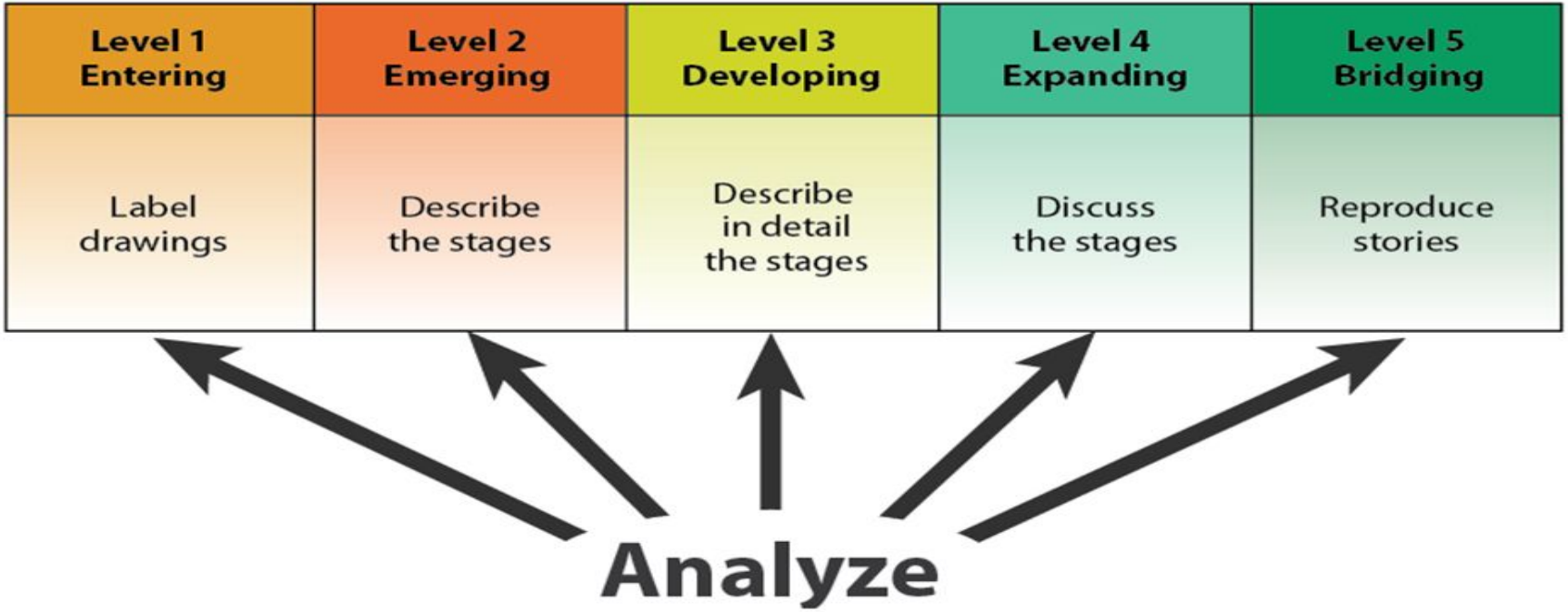
Figure 5M: CAN DO Descriptors for the Levels of English Language Proficiency, PreK-12

For the given level of English language proficiency, **with support**, English language learners can:

	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging	Level 6 Reaching
LISTENING	• Point to stated pictures, words, phrases • Follow one-step oral directions • Match oral statements to objects, figures or illustrations	• Sort pictures, objects according to oral instructions • Follow two-step oral directions • Match information from oral descriptions to objects, illustrations	• Locate, select, order information from oral descriptions • Follow multi-step oral directions • Categorize or sequence oral information using pictures, objects	• Compare/contrast functions, relationships from oral information • Analyze and apply oral information • Identify cause and effect from oral discourse	• Draw conclusions from oral information • Construct models based on oral discourse • Make connections from oral discourse	
SPEAKING	• Name objects, people, pictures • Answer WH- (who, what, when, where, which) questions	• Ask WH- questions • Describe pictures, events, objects, people • Restate facts	• Formulate hypotheses, make predictions • Describe processes, procedures • Retell stories or events	• Discuss stories, issues, concepts • Give speeches, oral reports • Offer creative solutions to issues, problems	• Engage in debates • Explain phenomena, give examples and justify responses • Express and defend points of view	
READING	• Match icons and symbols to words, phrases or environmental print • Identify concepts about print and text features	• Locate and classify information • Identify facts and explicit messages • Select language patterns associated with facts	• Sequence pictures, events, processes • Identify main ideas • Use context clues to determine meaning of words	• Interpret information or data • Find details that support main ideas • Identify word families, figures of speech	• Conduct research to glean information from multiple sources • Draw conclusions from explicit and implicit text	
WRITING	• Label objects, pictures, diagrams • Draw in response to a prompt • Produce icons, symbols, words, phrases to convey messages	• Make lists • Produce drawings, phrases, short sentences, notes • Give information requested from oral or written directions	• Produce bare-bones expository or narrative texts • Compare/contrast information • Describe events, people, processes, procedures	• Summarize information from graphics or notes • Edit and revise writing • Create original ideas or detailed responses	• Apply information to new contexts • React to multiple genres and discourses • Author multiple forms/ genres of writing	

Variability of students' cognitive development due to age, grade level spans, their diversity of educational experiences and diagnosed learning disabilities (if applicable) are to be considered in using this information.

Differentiation



Can-Do Descriptors for ELLs (PK - 12)

Links for Can Do Descriptors according to WIDA levels.

https://wida.wisc.edu/sites/default/files/resource/CanDo-KeyUses-Kindergarten.pdf

https://wida.wisc.edu/sites/default/files/resource/CanDo-KeyUses-Gr-1.pdf

https://wida.wisc.edu/sites/default/files/resource/CanDo-Booklet-Gr-1-2.pdf

https://wida.wisc.edu/sites/default/files/resource/CanDo-Booklet-Gr-3-5.pdf

https://wida.wisc.edu/sites/default/files/resource/CanDo-Booklet-Gr-6-8.pdf

https://wida.wisc.edu/sites/default/files/resource/CanDo-KeyUses-Gr-9-12.pdf

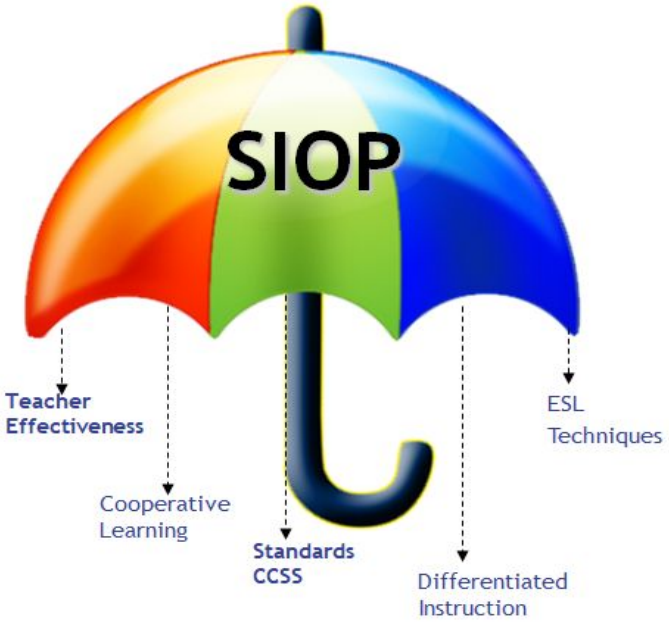
Parking Lot

How can you as a classroom teacher explain Sheltered Instruction based on your prior knowledge?

What is “SHELTERED” instruction?

Sheltered Instruction is an English immersion approach to instruction and classroom management that teachers can use to help English language learners acquire English and content area knowledge and skills.

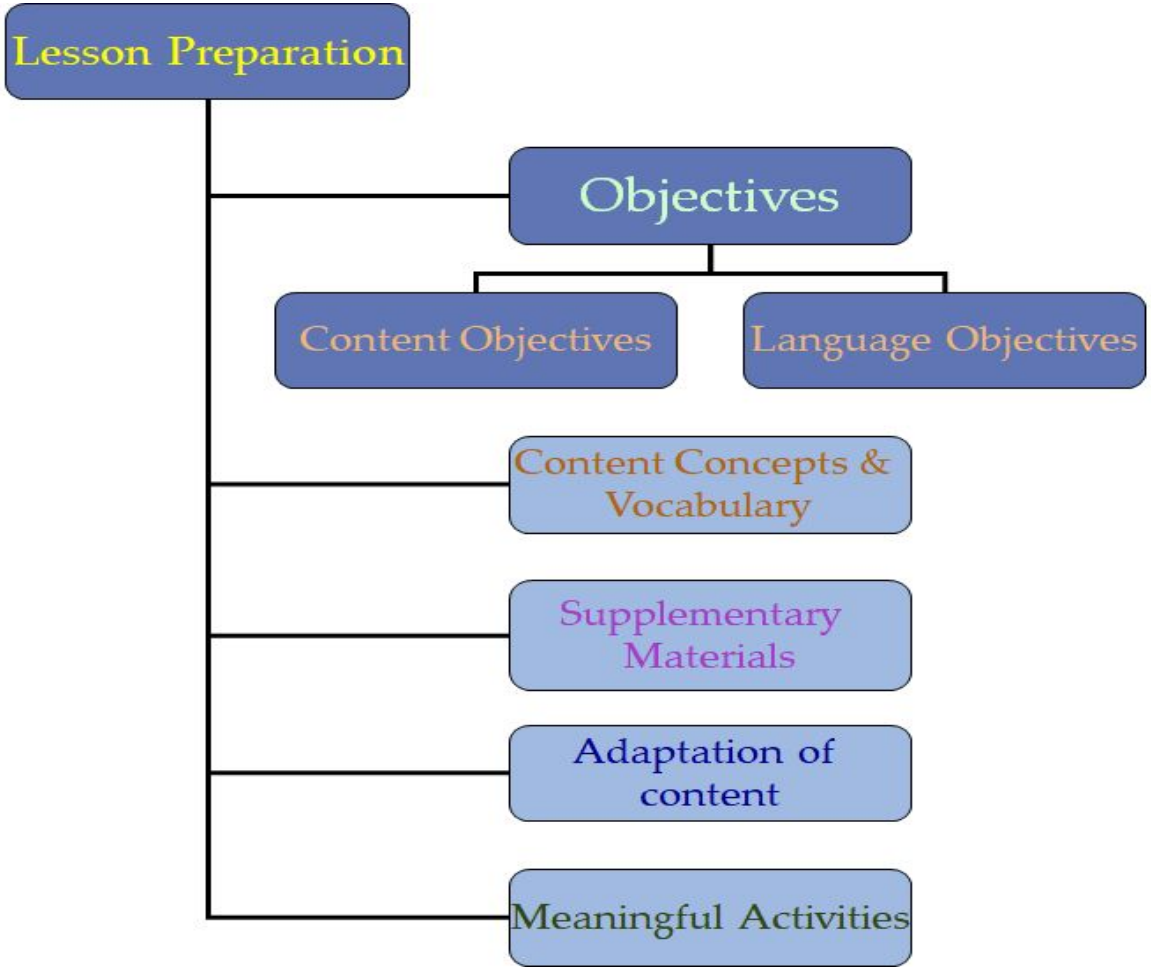
The Sheltered Instruction Observation Protocol (SIOP)



Components of The SIOP Model

(Echevarria, Vogt, & Short, 2004, 2008)

1. **Lesson Preparation** – language and content objectives that drive instruction
2. **Building Background** – vocabulary development, student connections
3. **Comprehensible Input** – ESL techniques
4. **Strategies** – metacognitive and cognitive strategies
5. **Interaction** – oral language
6. **Practice & Application** – practice all 4 language skills
7. **Lesson Delivery** – meet objectives
8. **Review & Assessment** – review vocabulary and concepts


Lesson Preparation
Objectives
Content Objectives
Language Objectives
Content Concepts & Vocabulary
Supplementary Materials
Adaptation of content
Meaningful Activities

Component 1: Lesson Preparation

Content Objectives (What?)

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two numbers less than or equal to 12.

Language Objectives (How?)

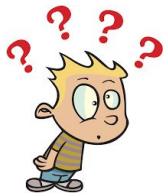
Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple *using an outline and notes*. Explain how to find the greatest common factor and least common multiple *using* Visuals, *a* Math Journal*/Interactive Notebook and* L1 support.

ELL Math Scaffolded Model Curriculum

	Student Learning Objective (SLO)		Language Objective		Language Needed
SLO: 6 CCSS: 6.NS.4 6WIDA ELDS: 3 Listening Writing	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two numbers less than or equal to 12.		Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple *using an outline and notes*. Explain how to find the greatest common factor and least common multiple *using* Visuals, *a* Math Journal, *and* L1 support.		**VU:** Common factor, greatest common factor, least common multiple, less than, equal to **LFC:** Present tense, question words, clauses **LC:** Varies by ELP level
	ELP 1	ELP 2	ELP 3	ELP 4	ELP 5
Language Objectives	Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple by explaining the process in L1 and/or use Gestures, examples, and selected, technical words.	Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple by explaining the process in L1 and/ or use selected technical vocabulary in phrases and short sentences.	Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple by explaining the process using key, technical vocabulary in simple sentences.	Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple by explaining the process using key, technical vocabulary in expanded and some complex sentences.	Demonstrate understanding of an oral explanation on how to find the greatest common factor and least common multiple by explaining the process using technical vocabulary in complex sentences.
Learning Supports	Visuals Math Journal L1 support Multiple Resources Partner work Teacher Support Word Bank	Visuals Math Journal L1 support Multiple Resources Partner work Teacher Support Word/Phrase Bank	Visuals Math Journal	Visuals Math Journal	Visuals

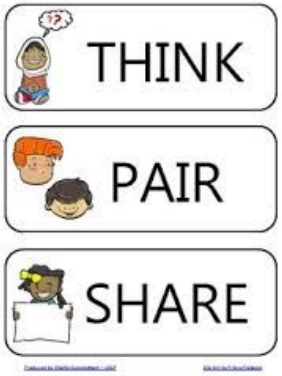
Component 2: Building Background

- Students cannot be engaged if they do
  you are talking about.
- Word Wall Suggestions:
  - http://www.doe.virginia.gov/instruction/mat
    vocab_cards/index.shtml
  - https://www.graniteschools.org/mathvocabu
    ds/



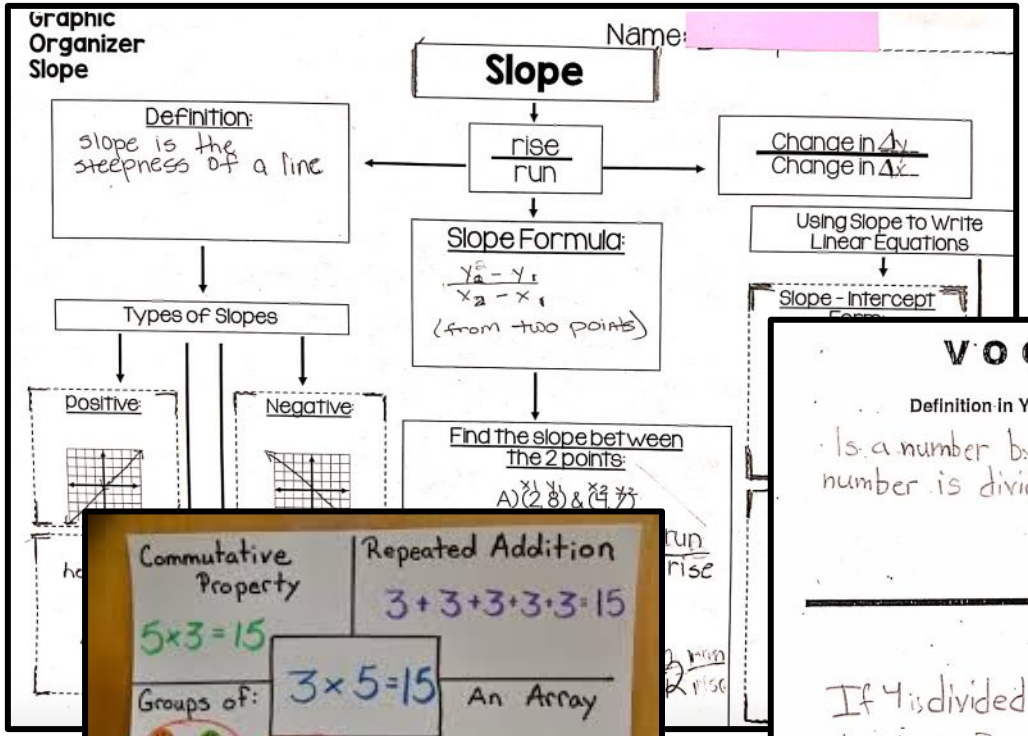
Vocabulary Instruction

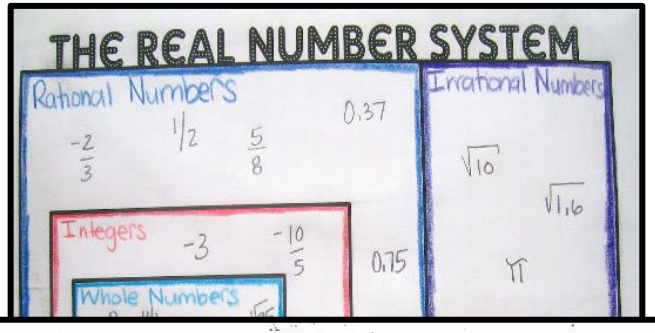
How do you approach vocabulary instruction in your classes?



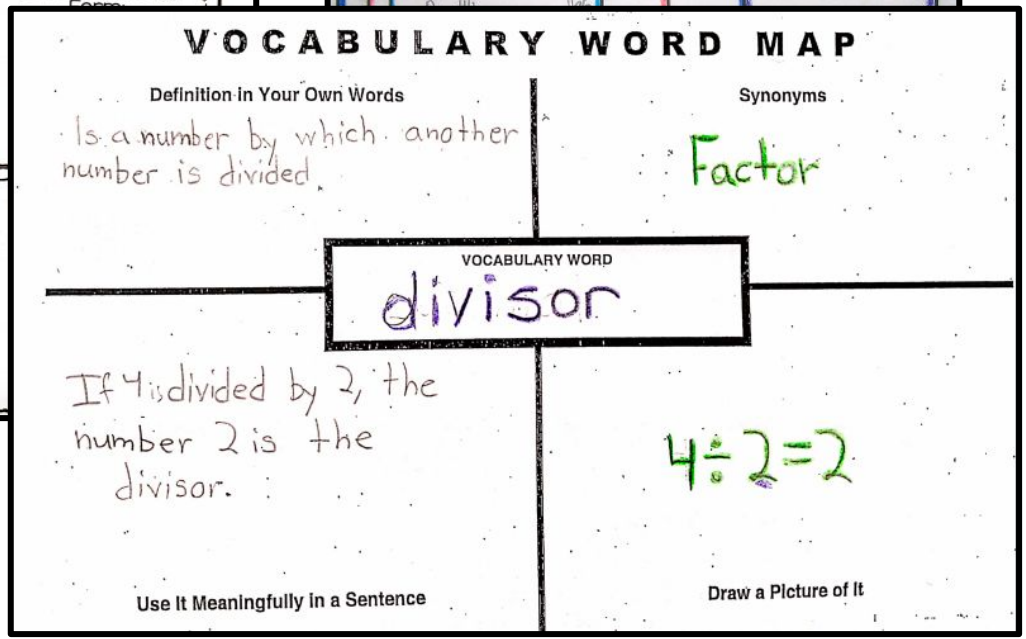
Vocabulary Acquisition

- Review key concepts and vocabulary.
- Provide multiple exposures to new terminology to build familiarity, confidence and proficiency.
- Paraphrase – it provides an effective scaffold, especially after words and phrases have been previously defined and discussed in context.
- Help students become more familiar with academic language through introducing and modeling academic tasks.
- Provide opportunities for students to use the newly acquired vocabulary in speaking and writing.

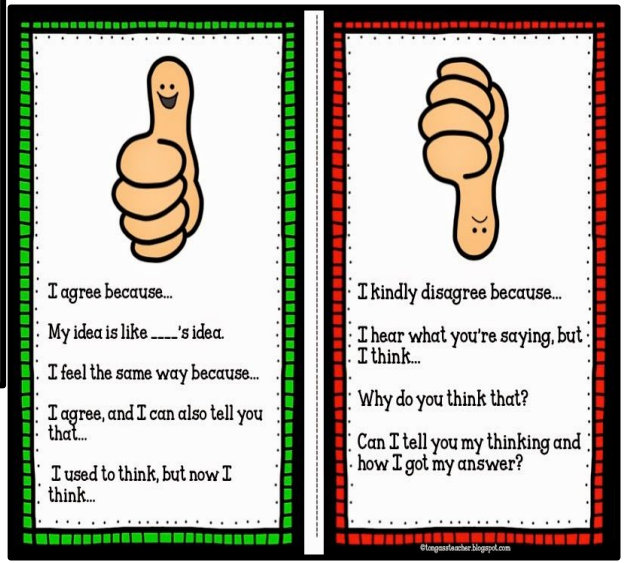

Graphic Organizer Slope
Name:
Slope
Definition:
slope is the steepness of a line
rise / run
Change in y / Change in x
Slope Formula:
(from two points)
Using Slope to Write Linear Equations
Slope - Intercept
Types of Slopes
Positive
Negative
Find the slope between the 2 points:


THE REAL NUMBER SYSTEM
Rational Numbers
Irrational Numbers
Integers
Whole Numbers
0.37
0.75

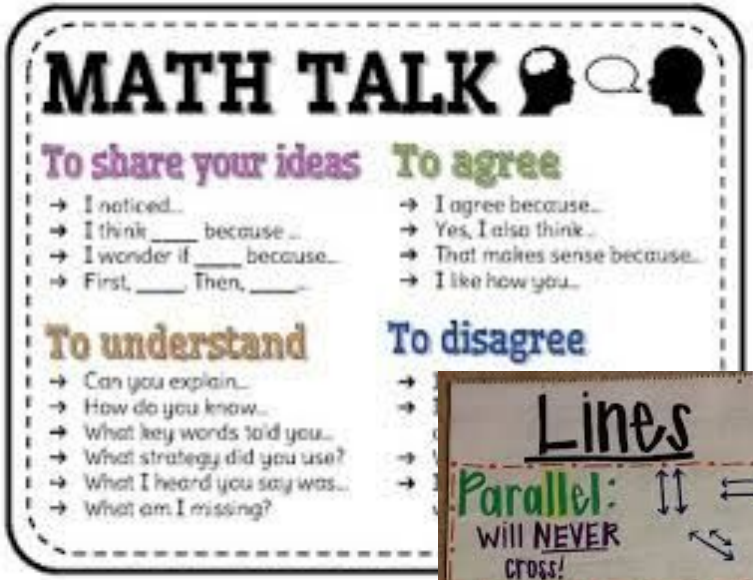
Commutative Property
5×3=15
Repeated Addition
3+3+3+3+3=15
Groups of:
3×5=15
An Array
3 groups of 5

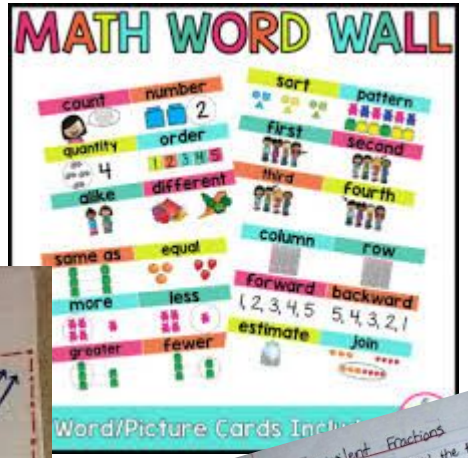

VOCABULARY WORD MAP
Definition in Your Own Words
Is a number by which another number is divided.
Synonyms
Factor
VOCABULARY WORD
divisor
If 4 is divided by 2, the number 2 is the divisor.
4÷2=2
Use It Meaningfully in a Sentence
Draw a Picture of It

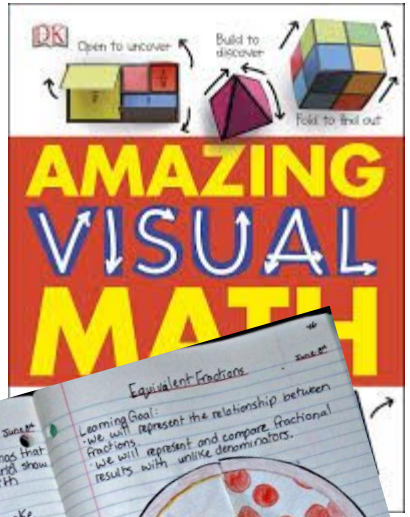

Math Talk
• I agree/disagree with you because...
• What I heard you say was...
• What key words helped you solve this?
• Can you explain this to me?
• What were you thinking here?
• How did you solve it?
• What did you start with?
• Why did you choose that operation?
• What strategy did you use?
• Why did you choose that strategy?
• How did you know your answer was right?
• Prove your answer is right.
• How else can you solve it?
• How did this help you understand?
• How is this like other problems you've solved?


I agree because...
My idea is like ____'s idea.
I feel the same way because...
I agree, and I can also tell you that...
I used to think, but now I think...
I kindly disagree because...
I hear what you're saying, but I think...
Why do you think that?
Can I tell you my thinking and how I got my answer?

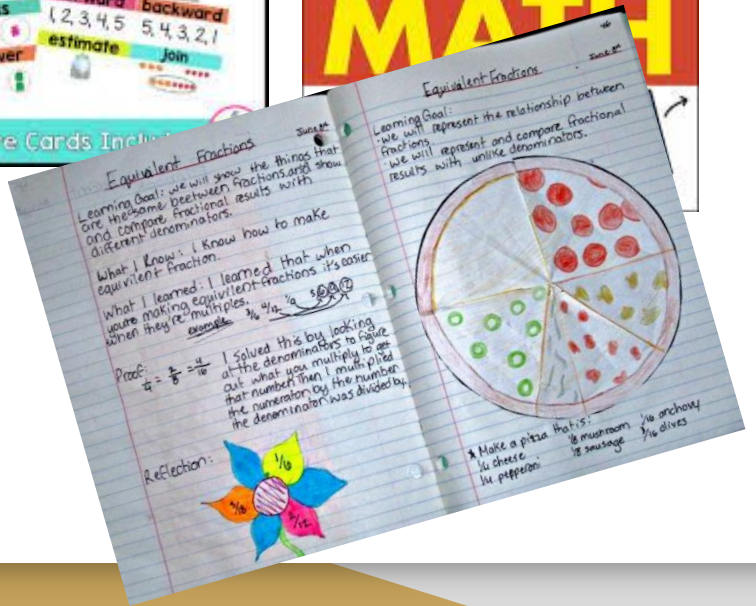

MATH TALK
CONVERSATION STARTERS
LET'S TALK MATH!
TO EXPLAIN:
➢The strategy I used was...
➢I noticed that...
TO AGREE:
➢I agree with _____ because...
➢My strategy is like yours because...
➢That solution makes sense because...
TO DISAGREE:
➢I disagree with _____ because...
➢The solution doesn't make sense because...
TO CLARIFY:
➢Can you explain how/why...
➢I have a question about...
TO EXTEND:
➢I would like to add onto...
➢Another strategy we could use is...


MATH TALK
To share your ideas
I noticed...
I think ____ because...
I wonder if ____ because...
First, ____ Then, ____.
To agree
I agree because...
Yes, I also think...
That makes sense because...
I like how you...
To understand
Can you explain...
How do you know...
What key words told you...
What strategy did you use?
What I heard you say was...
What am I missing?
To disagree


MATH WORD WALL
count
number
quantity
order
alike
different
same as
equal
more
less
greater
fewer
sort
pattern
first
second
third
fourth
column
row
forward
backward
1, 2, 3, 4, 5
5, 4, 3, 2, 1
estimate
join
Word/Picture Cards Incl


DK
Open to uncover
Build to discover
Fold to find out
AMAZING
VISUAL
MATH


Lines
Parallel:
will NEVER cross!
Perpendicular:
will cross to make RIGHT ANGLES!
Intersecting:
will cross but do NOT make right angles!


Equivalent Fractions
Learning Goal: we will show the things that are the same between fractions and compare fractional results with different denominators.
What I Know: I know how to make equivalent fraction.
What I learned: I learned that when you're making equivilent fractions it's easier when they're multiples.
Proof:
I solved this by looking at the denominators to figure out what you multiply to get that number then I multiplied the numerator by the number the denominator was divided by.
Reflection:
Equivalent Fractions
Learning Goal:
-we will represent the relationship between fractions
-we will represent and compare fractional results with unlike denominators.
Make a pizza that is:
½ cheese
½ pepperoni
⅛ mushroom
⅛ sausage
1/16 anchovy
1/16 olives

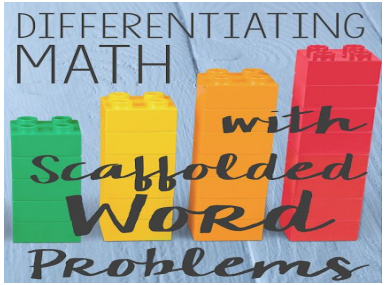
What are some things I already do?

List 2 things you do in your instruction that can be used to support language acquisition.

Meaningful Activities

Review your content and language objectives. How can you develop an activity that links concepts to a student's background, links to prior learning, and focuses on key vocabulary for the concept?

Scaffolding Task



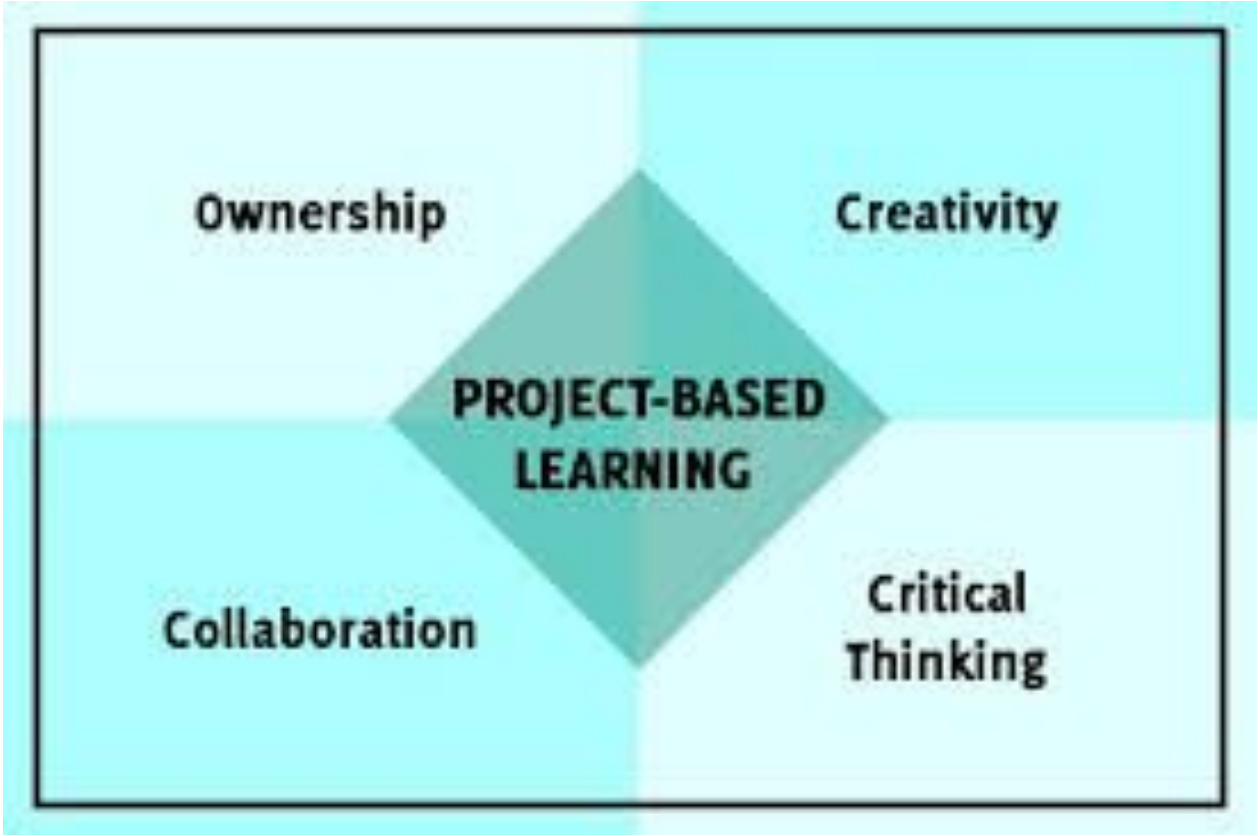
Traffic Jam

You are stuck in a big traffic jam on the freeway and you are wondering how long it will take to get to the next exit, which is $1\frac{1}{2}$ miles away. You are timing your progress and find that you can travel $\frac{2}{3}$ of a mile in one hour. If you continue to make progress at this rate, how long will it be until you reach the exit? Solve the problem with a diagram and explain your answer.

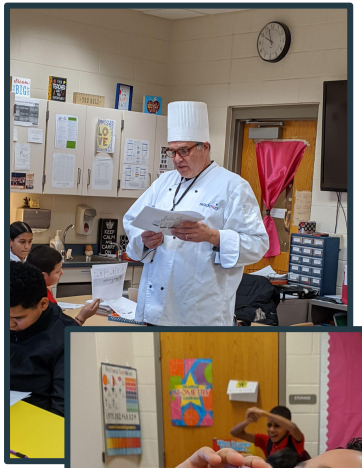
Traffic Jam (with scaffolds)

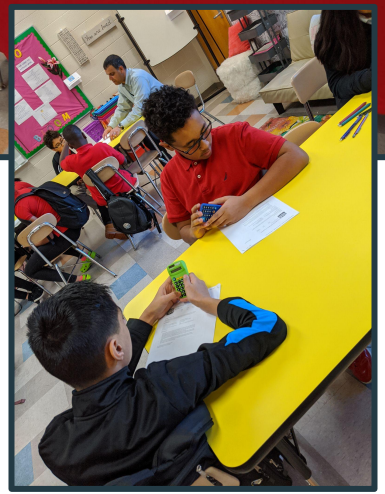
What is Project-Based Learning?

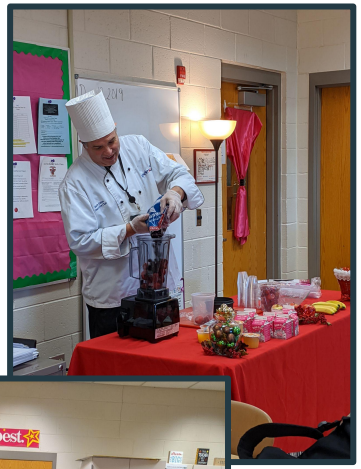
PBL is a model for classroom activity that shifts away from the classroom practices of short, isolated, teacher-centered lessons and instead emphasizes learning activities that are long-term, interdisciplinary, and student-centered.

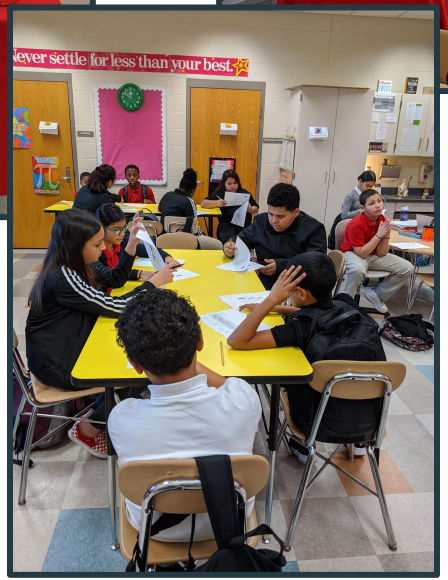

Ownership
Creativity
PROJECT-BASED LEARNING
Collaboration
Critical Thinking

PBL affords students opportunities to develop Gardner's Multiple Intelligences, thus accommodating a wide variety of learning styles.





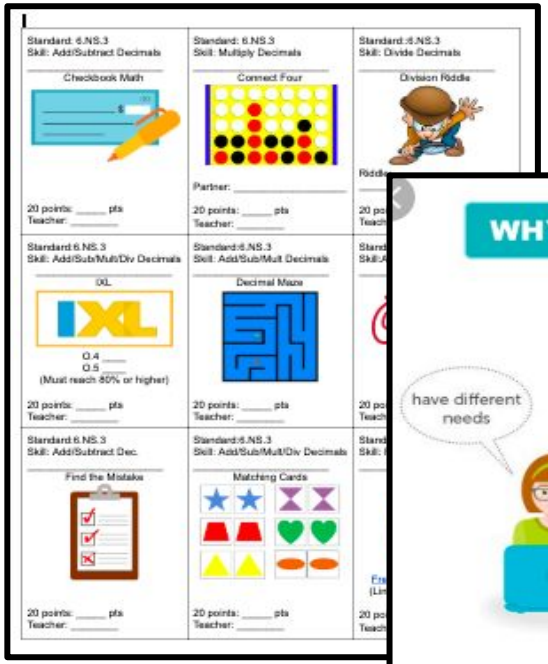


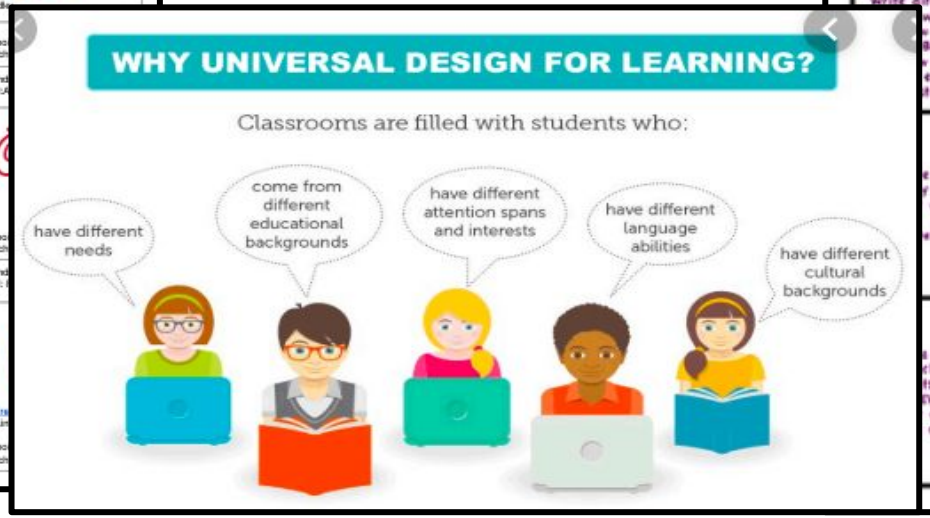

never settle for less than your best

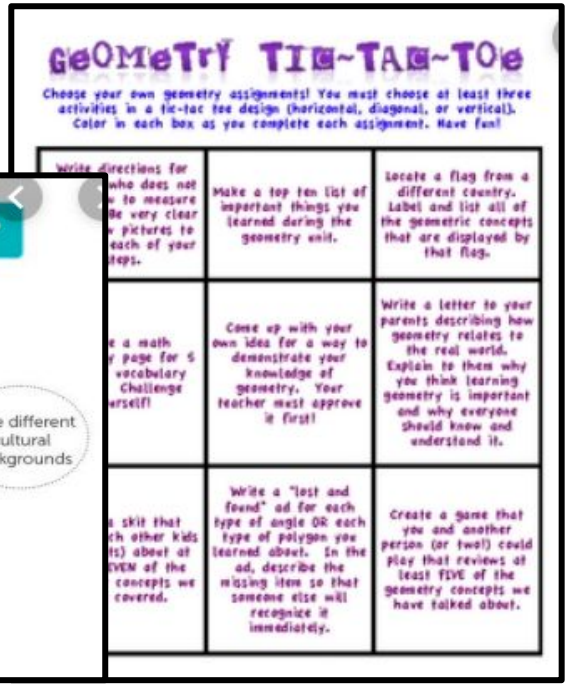
LEARNING MATH

THROUGH MOVEMENT

Universal Design for Learning Menus/Choice Boards







Parking Lot

What meaningful activities are you planning on incorporating into your upcoming lesson?

Component 3: Comprehensible Input

- Modeling & Visuals
- Scaffolding Techniques
- Variety of Questioning

Component 4: Accommodation Strategies

- Wait Time
- Think Pair Share/ Turn and Talk
- Word/Illustration Banks and Walls
- Fewer test items or choice options, avoid open-ended responses with lower levels (unless in L1)
- Interactive Notebooks
- Graphic Organizers
- Use of L1
- Frequent Checks for Understanding
- Hands-On/ Real Life Experiences
- Total Physical Response (TPR)
- Visual Supports

Component 5: Interaction

Sensory Supports	Graphic Supports	Interactive Supports
• Real-life objects (realia) • Manipulatives • Pictures & photographs • Illustrations, diagrams & drawings • Magazines & newspapers • Physical activities • Videos & Films • Broadcasts • Models & figures	• Charts • Graphic organizers • Tables • Graphs • Timelines • Number lines	• In pairs or partners • In triads or small groups • In a whole group • Using cooperative group structures • With the Internet (Web sites) or software programs • In the native language (L1) • With mentors


5.8 cm
11.7 cm
17.8 cm


581
0:00 / 0:17


Sprite
Coca-Cola

Component 8:
Review & Assessment

- Nearpod
- Kahoot
- Quizizz
- White Board/Communicators
- Edulastic
- EdPuzzle
- Padlet
- Whiteboard.fi
- Gimkit

Additional Resources

ESL Tech Apps

Reflection

Please complete the following sentence frames:

- I learned that...
- I wonder...
- I still would like to know...

THANK YOU!

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Elena: egreenwood@vineland.org