CELIN

Asia Society | Center for Global Education
China Learning Initiatives

Teaching and Learning Math in Chinese-English Dual Language Programs

Grades K-5

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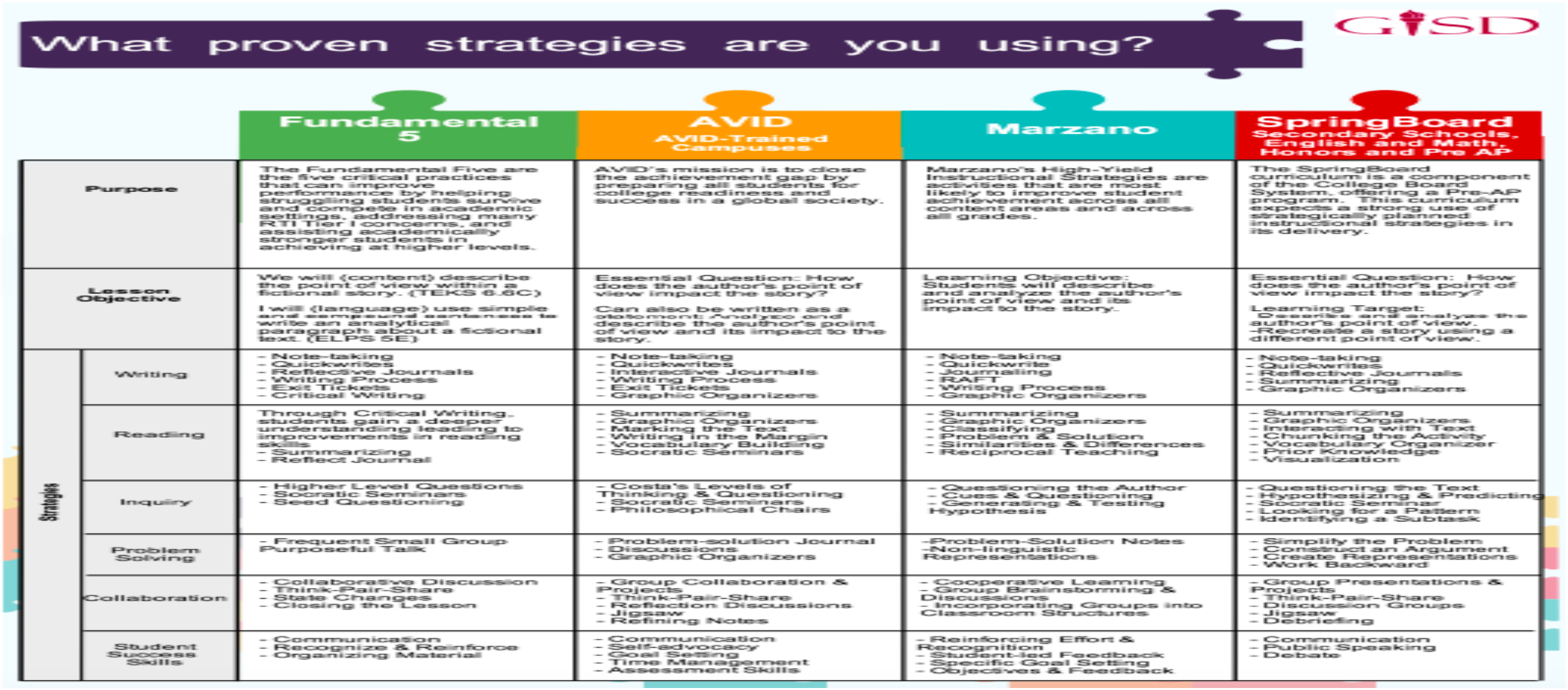
Learning Goal

Share research-based resources and practices at Garland ISD, TX for math instruction in immersion classrooms

Garland ISD Curriculum Matrix



What proven strategies are you using?

GISD

		Fundamental 5	AVID AVID-Trained Campuses	Marzano	SpringBoard Secondary Schools, English and Math, Honors and Pre AP
Purpose		The Fundamental Five are the five critical practices that can improve performance by helping struggling students survive and compete in academic settings, addressing many RTI Tier I concerns, and assisting academically stronger students in achieving at higher levels.	AVID's mission is to close the achievement gap by preparing all students for college readiness and success in a global society.	Marzano's High-Yield Instructional Strategies are activities that are most likely to improve student achievement across all content areas and across all grades.	The SpringBoard curriculum is a component of the College Board System, offering a Pre-AP program. This curriculum expects a strong use of strategically planned instructional strategies in its delivery.
Lesson Objective		We will (content) describe the point of view within a fictional story. (TEKS 6.6C) I will (language) use simple and compound sentences to write an analytical paragraph about a fictional text. (ELPS 5E)	Essential Question: How does the author's point of view impact the story? Can also be written as a statement: Analyze and describe the author's point of view and its impact to the story.	Learning Objective: Students will describe and analyze the author's point of view and its impact to the story.	Essential Question: How does the author's point of view impact the story? Learning Target: -Describe and analyze the author's point of view. -Recreate a story using a different point of view.
Strategies	Writing	- Note-taking - Quickwrites - Reflective Journals - Writing Process - Exit Tickets - Critical Writing	- Note-taking - Quickwrites - Interactive Journals - Writing Process - Exit Tickets - Graphic Organizers	- Note-taking - Quickwrite - Journaling - RAFT - Writing Process - Graphic Organizers	- Note-taking - Quickwrites - Reflective Journals - Summarizing - Graphic Organizers
	Reading	Through Critical Writing, students gain a deeper understanding leading to improvements in reading skills - Summarizing - Reflect Journal	- Summarizing - Graphic Organizers - Marking the Text - Writing in the Margin - Vocabulary Building - Socratic Seminars	- Summarizing - Graphic Organizers - Classifying - Problem & Solution - Similarities & Differences - Reciprocal Teaching	- Summarizing - Graphic Organizers - Interacting with Text - Chunking the Activity - Vocabulary Organizer - Prior Knowledge - Visualization
	Inquiry	- Higher Level Questions - Socratic Seminars - Seed Questioning	- Costa's Levels of Thinking & Questioning - Socratic Seminars - Philosophical Chairs	- Questioning the Author - Cues & Questioning - Generating & Testing Hypothesis	- Questioning the Text - Hypothesizing & Predicting - Socratic Seminar - Looking for a Pattern - Identifying a Subtask
	Problem Solving	- Frequent Small Group Purposeful Talk	- Problem-solution Journal - Discussions - Graphic Organizers	-Problem-Solution Notes -Non-linguistic Representations	- Simplify the Problem - Construct an Argument - Create Representations - Work Backward
	Collaboration	- Collaborative Discussion - Think-Pair-Share - State Changes - Closing the Lesson	- Group Collaboration & Projects - Think-Pair-Share - Reflection Discussions - Jigsaw - Refining Notes	- Cooperative Learning - Group Brainstorming & Discussions - Incorporating Groups into Classroom Structures	- Group Presentations & Projects - Think-Pair-Share - Discussion Groups - Jigsaw - Debriefing
	Student Success Skills	- Communication - Recognize & Reinforce - Organizing Material	- Communication - Self-advocacy - Goal Setting - Time Management - Assessment Skills	- Reinforcing Effort & Recognition - Student-led Feedback - Specific Goal Setting - Objectives & Feedback	- Communication - Public Speaking - Debate

The 5E Instructional Model

https://bscs.org/sites/default/files/_legacy/BSCS_5E_Instructional_Model-Full_Report.pdf

Engage
- promote curiosity
- elicit prior knowledge

Explore
- explore new concepts and possibilities
- design and conduct a preliminary investigation
- generate ideas

Explain
- Teacher introduces a concept, process, or skill
- students demonstrate their understanding of the concept

Elaborate
- develop deeper understanding and adequate skills
- integrate other subjects

Evaluate
- Teacher conducts formative or summative assessment
- Students assess their understanding and abilities

Evidence-based Strategies For Teaching Mathematics

https://iris.peabody.vanderbilt.edu/module/math/cresource/q3/p05/

Explicit Instruction

Teaches explains a specific skill or concept in a highly structured environment using clear and direct language.

Peer Tutoring

Students work in pairs to practice the skill and concept being taught.

Cooperative Learning

Students work in small groups to maximize everyone's learning.

Evidence-Based Strategies or not?

https://iris.peabody.vanderbilt.edu/module/math/cresource/q3/p05/

Best Evidence Encyclopedia
Center for Data-Driven Reform in Education (Johns Hopkins University)
http://www.bestevidence.org

Center on Instruction
RMC Research Corporation
http://www.centeroninstruction.org/

Promising Practices Network
RAND Corporation
http://www.promisingpractices.net/programs.asp

What Works Clearinghouse
U.S. Department of Education Institute of Education Services
http://ies.ed.gov/ncee/wwc/

Grades K-2 Math Topics

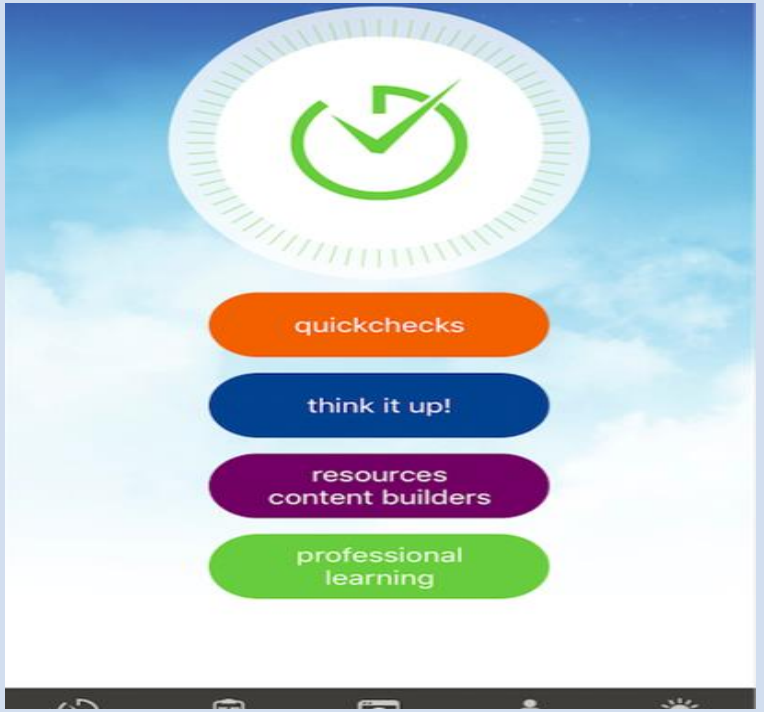
Kindergarten	1st Grade	2nd Grade
★ counting and comparing numbers 0-5 ★ counting and comparing numbers 6-10 ★ counting and comparing numbers to 30 ★ understanding addition and subtraction ★ money ★ counting to 100 ★ more addition and subtraction ★ two-and three-dimensional shapes ★ measurement ★ data ★ personal financial literacy	★ understanding addition and subtraction ★ addition and subtraction strategies and relationships ★ more addition and subtraction ★ number patterns ★ place value to 120 ★ money and personal financial literacy ★ geometry and fractions ★ measurement ★ data	★ addition and subtraction strategies ★ place value ★ money ★ exploring addition and subtraction strategies ★ regrouping with addition and subtraction ★ three-digit addition and subtraction ★ number patterns and algebra ★ multiplication and division ★ fractions ★ geometry and measurement ★ analyzing data ★ personal financial literacy

Grades 3-5 Math Topics

3rd Grade	4th Grade	5th Grade
★ place value and money ★ adding and subtracting whole numbers ★ multiplication ★ division ★ personal financial literacy ★ multiply 2-digit numbers and equations ★ fractions ★ geometry and measurement ★ data analysis	★ place value ★ adding & subtracting whole numbers and decimals ★ multiplication ★ division ★ personal financial literacy ★ patterns and equations ★ fractions ★ geometry and measurement ★ data analysis	★ place value and decimals ★ multiplying whole numbers and decimals ★ dividing whole numbers and decimals ★ expressions and equations ★ adding and subtracting fractions ★ multiplying and dividing fractions ★ geometry and measurement ★ data analysis ★ personal financial literacy ★ number sense

Lead4Ward

- Aligned with TEKS
  - Core subjects
    - K-12
  - Resources
- Instructional Strategies



Lead4Ward

- ❖Download Lead4Ward in App store
- ❖Click on Math
- ❖Click on a grade level
- ❖Click on Instructional Strategies
- ❖Click on Overview
- ❖Click on Instructional Strategies

  Playlist to search for strategies that :
  - ➢engage learners
  - ➢provide practice without penalty
  - ➢encourage interaction among students
  - ➢see and hear students' thinking

Instructional Strategies Playlist

- Movement and Disclosure playlist
- Rehearsal and practice playlist
- Extending thinking playlist
- Learning from mistakes playlist
- Evidence of learning playlist

- click on each playlist to see a list of strategies in detail
- Think-Pair-Share your ideas of adapting these strategies in your immersion class.

NCTM | NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

- **Exclusive resources to improve math teaching**
- **Exploring math through literature PreK-8**

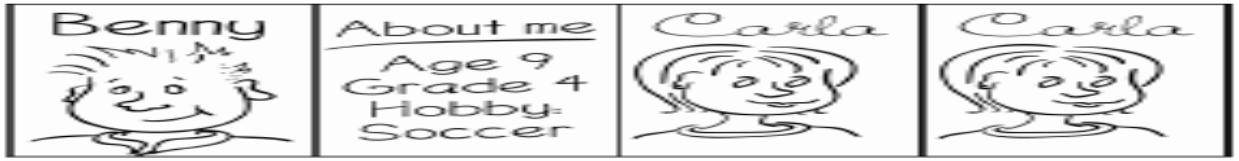
http://www.nctm.org/

Pitching Card

http://illuminations.nctm.org/Lesson.aspx?id=615

Pitching Cards NAME _____

Pitch your card at the wall five times.



1. Record the distance between your card and the wall in centimeters for each of the five tries.

TURN	DISTANCE FROM THE WALL
1	
2	
3	
4	
5	

2. Order the distances from the wall from least to greatest:

_____ _____ _____ _____ _____

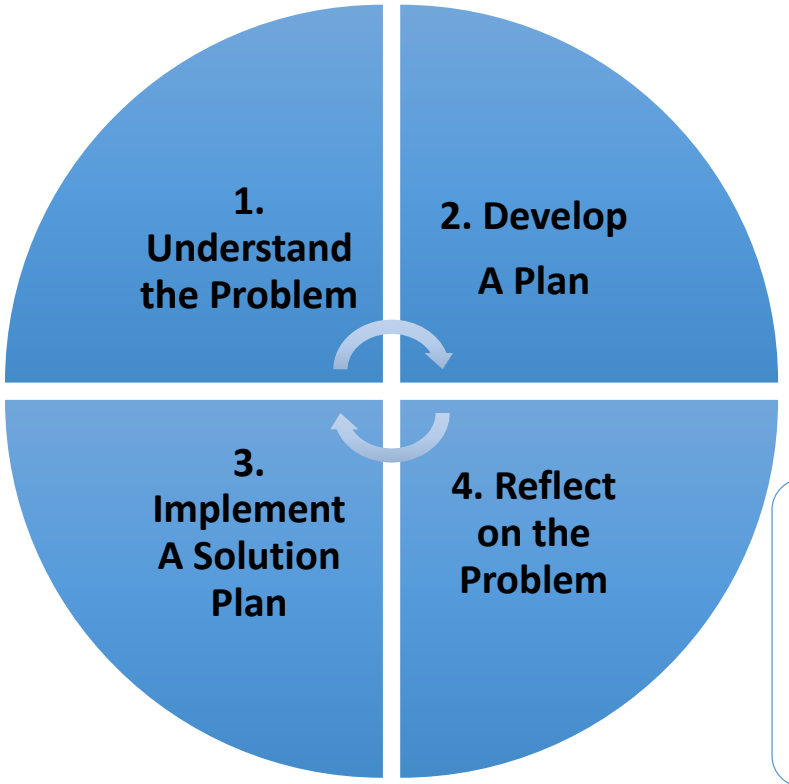
3. What is the median distance from the wall? _____

4. What is the range of distances from the wall? _____

Summary

Problem Solving Strategies, Florida DOE
goo.gl/EkQRV9

- Read, question, analyze
- Vocabulary



- Hypothesis, estimate, discuss
- Pictures, charts, tables

- Number sentence
- operation

- Work backwards
- Evaluating answers

Resources: Technology for Math

★Sum Dog (www.sumdog.com)

★Padlet Instructions (https://padlet.com/)

★Kahoot (https://getkahoot.com/)

★Google Classroom (https://classroom.google.com)

★Popplet Instructions (http://popplet.com/)

Aurasma (https://www.aurasma.com/)

ChatterPix (App)

Educreation (App)

Tellagami (App)

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