



International Mathematics Education Conference

Building Academic Language in Mathematics for English Learners

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Objectives

- Review current research
- Become familiar with the linguistic and cognitive needs of ELL students in the Mathematics classroom.
- Acquire strategies that will allow ELL students to participate successfully in the Mathematics classroom.
- Experience Mathematics hands-on activities that incorporate strategies appropriate for ELL students.
- Explore strategies that build a framework for accessing the mathematics curriculum for English Language Learners.

Anticipation/Reaction Guide

Before	True or False?	After
	Academic language is used in the learning of academic subject matter.	
	ELL students needs academic language in order to achieve in school.	
	Social language is harder than academic language.	
	It takes about 7 years to master academic language.	
	Academic language is primarily acquired through listening & speaking practice.	

What is Academic Language?

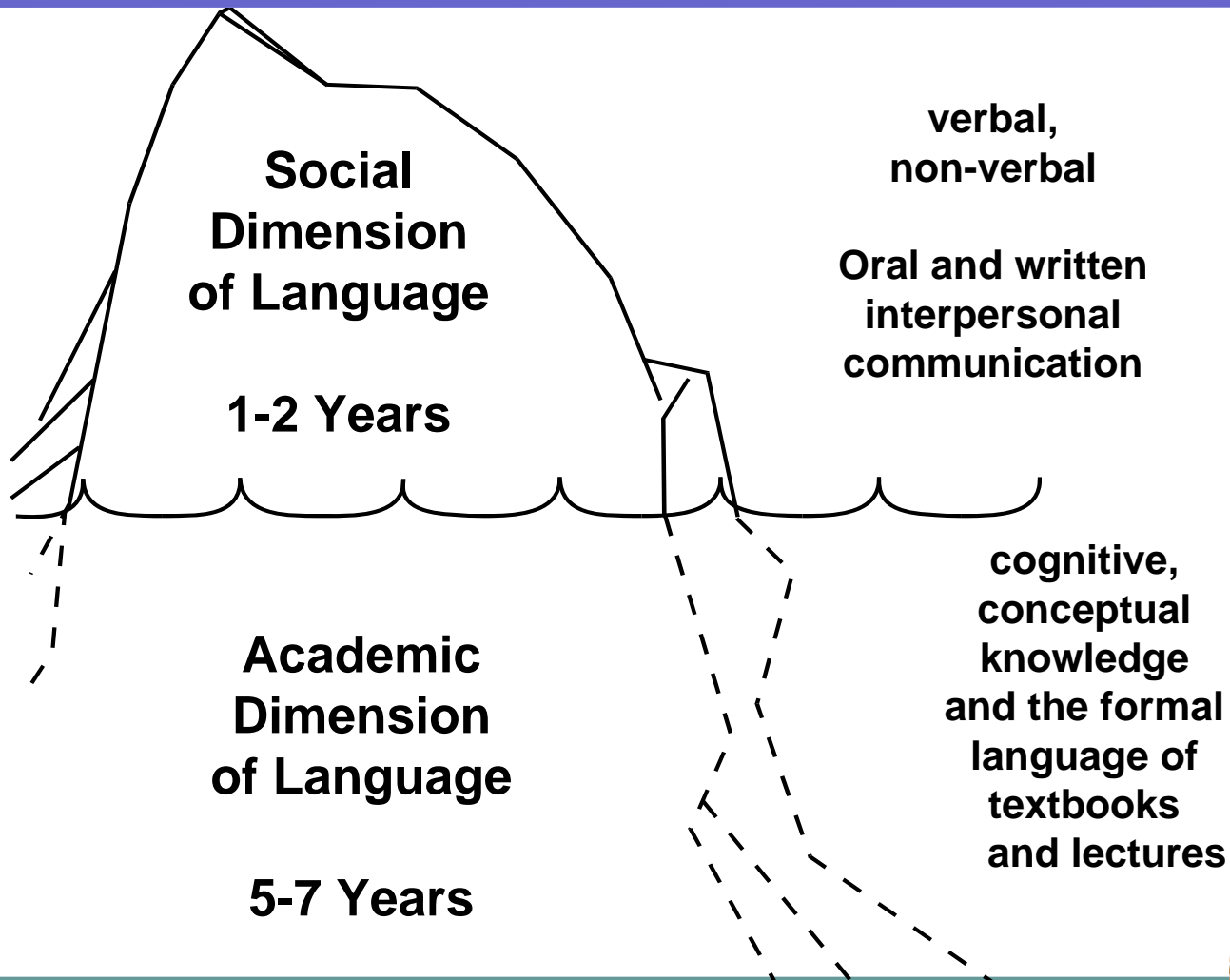
Teaching English as a
Foreign Language (TEFL)

David and
Yvonne
Freeman



Jim
Cummins

The Two Dimensions of Language



3 Dimensions of Academic Language

Linguistic
Dimension



Cognitive
Dimension

The Sociolinguistic/Psychological Dimensions

Academic Language

- Formal
- Cognitively complex
- Predominately written
- 100,000 words
- Takes years to master (at least 5)

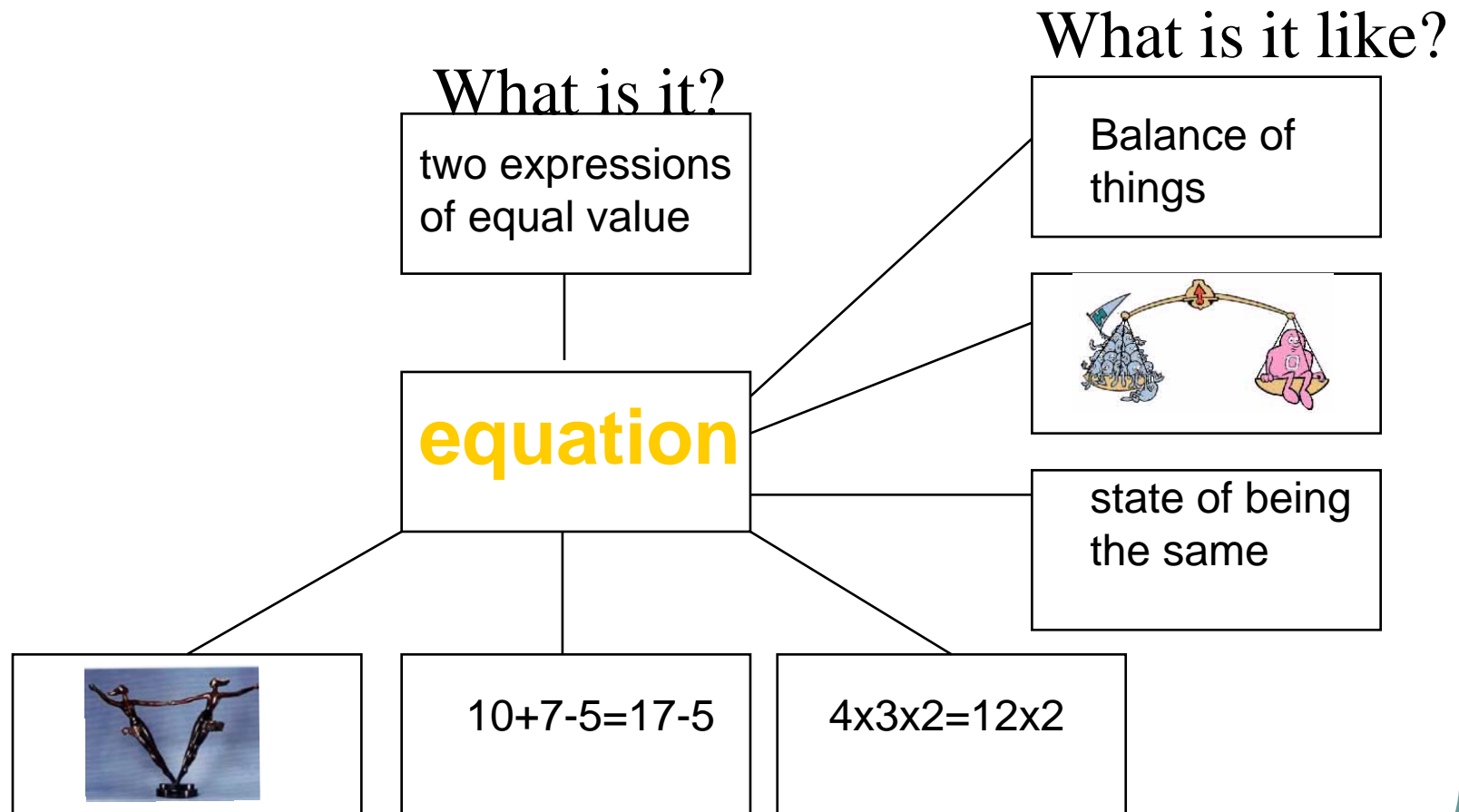
Example: Properties of Equality

NCTM STANDARD: Algebra

Objective: explain why expressions are or are not equivalent and give values for variables that make equations true.

Vocabulary: Equation
properties of equality
inverse operations

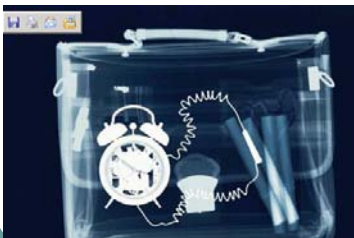
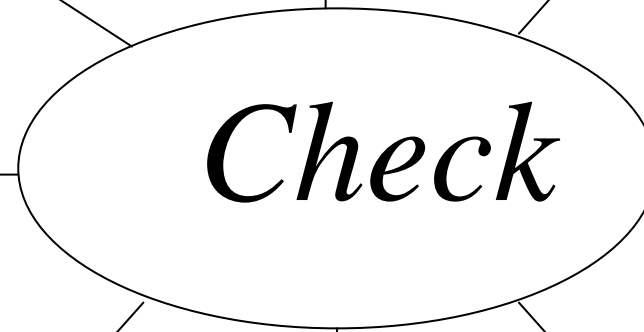
Concept Map



Wheel Map

Check the answer

- ✓ 100's of Frames to Choose From.
- ✓ FREE Scratch Resistant Coating.
- ✓ 2nd Pair Includes Invisible Bifocals or Single Vision Lenses with a Red Tag Frame.
- ✓ 30 Day Money Back Promise of Satisfaction.
- ✓ Guaranteed Lowest Prices.
- ✓ 1 Hour Service (in most cases)



Before

- Addition Property of Equality
- Subtraction Property of Equality

Help Students Acquire Academic Language

Activate background knowledge

Use Cognates

Use Concept Maps

Use Wheel Maps

Problems of the ELL Student in an All English Curriculum

- **Affective**

Some ELL students may bring low self-concepts to the classroom

Some ELL students may feel that their language is both academically and socially unworthy

Many ELL students experience feelings of frustration and powerlessness.

Problems of the ELL Student in an All English Curriculum

- **Cognitive**

Many ELL students may decode well, but comprehend little.

Many ELL students may have concepts, but are unable to articulate

Problems of the ELL Student in an All English Curriculum

- **Linguistic**

Difficulty understanding teacher

Difficulty understanding the materials (text, films, resource books)

Difficulty understanding “classroom” English

Bilingual students code-switch

True or False?

§ Language used in the learning of academic subject matter.

✦ One needs academic language in order to achieve in school.

✦ Social language is harder than academic language

✦ It takes about 7 years to master academic language.

✦ Academic language is primarily acquired through listening & speaking practice.

Haim Ginott

“I’ve come to a frightening conclusion that I am the decisive element in the classroom. It’s my personal approach that creates the climate. It’s my daily mood that makes the weather.

As a teacher, I possess a tremendous power to make a child’s life miserable or joyous. I can be a tool of torture or an instrument of inspiration. I can humiliate or humor, hurt or heal.

In all situations it is my response that decides whether a crisis will be escalated or de-escalated and a child humanized or de-humanized.

Resources

- Cummins, J (2000). *Academic Language learning, Transformative Pedagogy and Information Technology*: Towards a critical balance. TESOL Quarterly, 34(3), 537-548
- Cummins, J (2000), *Language Power and Pedagogy: Bilingual Children in the Crossfire*. Tonawanda, NY, Multilingual Matters.
- Giridharan, Beena (2002). "The Importance of Preferred Themes in Academic Readings", Curtin University of Technology, Sarawak Campus, Malaysia
- Freeman, David and Yvonne, Myers, Matthew. *Promoting the Development of Academic Spanish and English for Teachers and Students*
- Scarcella, R. (2003) *Accelerating Academic English: A Focus on the English Learner*. Irvine, CA. University of California, Irvine.