

Math Concepts: L1 and L2

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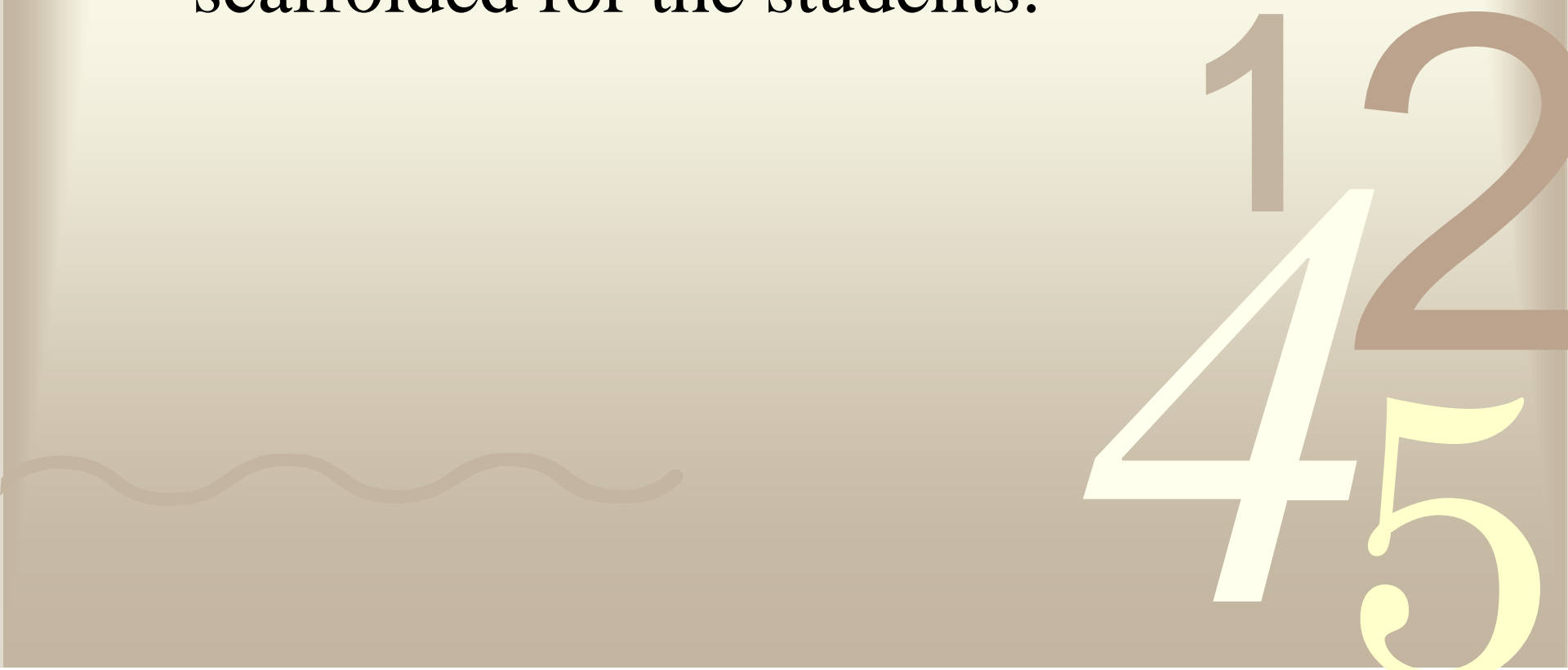


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How do we manage the learning of Math Concepts in L1 and L2?

The math literacy lessons in DLM are
scaffolded for the students.

A decorative graphic in the bottom right corner features the numbers 1, 2, 4, and 5. The number 1 is a simple brown vertical stroke. The number 2 is a thick brown curve. The number 4 is a white number with a brown outline. The number 5 is a yellow number with a brown outline. A light brown wavy line is positioned at the bottom left of the slide.

Math L1/L2 Strategies

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- We offer a strategy for managing the math concepts in dual languages are inherent in the program.



We already know:

- From Brain-based research that an additive English approach within bilingual education is compatible to the development of language.



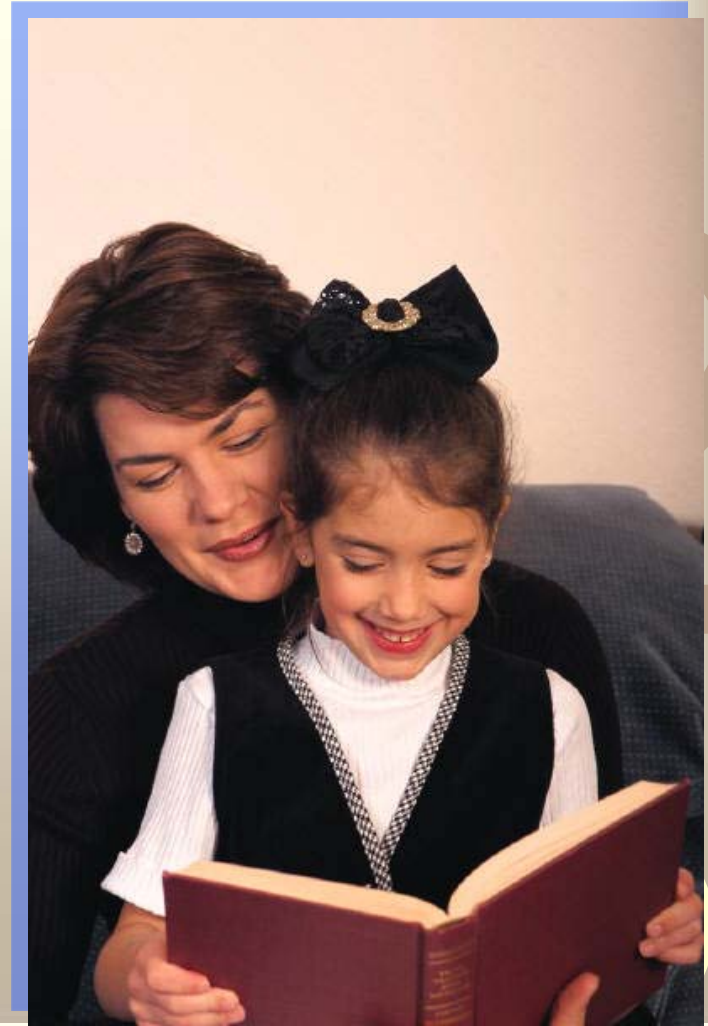
We already know that such an approach works for the development of:

BICS and CALP

Additive vs. Subtractive
Bilingualism

Access of Cognitive
Skills

Brain Research



Brain Research

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Second language acquisition has an open window for brain connection from birth to age ten; therefore, beginning a dual language program at an early grade level is the recommended practice for school personnel and parents.



Supportive Theoretical Frameworks

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Students reach high levels of academic achievement when the following three components are developed.

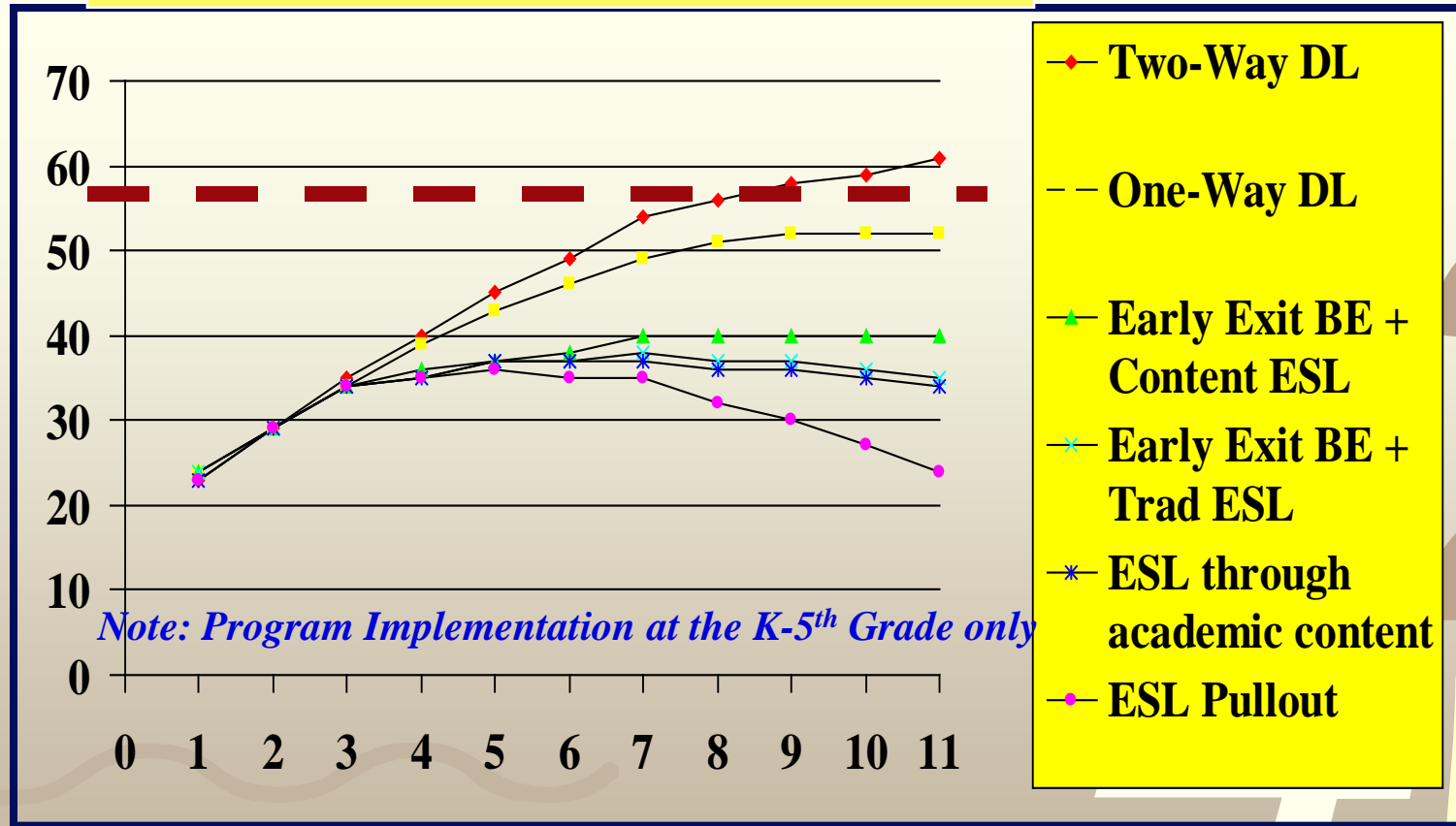
Subject matter teaching in first and/or second language

Literacy development in first and second language

Comprehensible input in English and the second language

National Data

(Standardized Reading Scores - ELL Students)



-- = average Reading score of native English speaker

(Thomas & Collier, 2002)

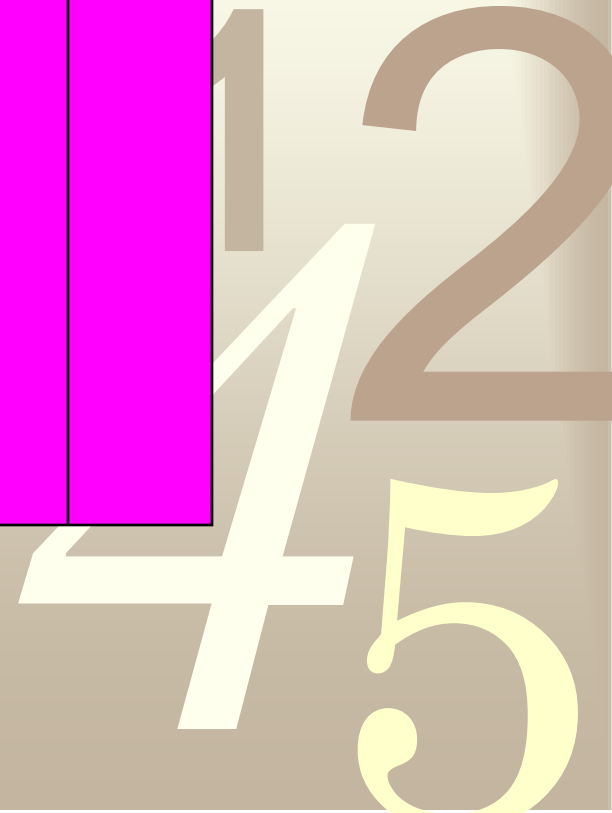
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Separation of Languages

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Separation of languages for instruction helps promote language development.



Comprehensible Instruction

- *Comprehensible instruction* is carefully making instruction understood by utilizing strategies that scaffold language acquisition.
- *Monitoring language* use and comprehension throughout the delivery of a lesson is explicitly planned to check that students are making sense and understanding what is being taught.

Comprehensible Instruction

- Modeling
- Chunking Language
- Contextualizing Vocabulary
- Cognates
- Visuals
- Hands On

Monitoring Language

- Paraphrasing
- Repetition
- Adjusting Speech
- Checking for Comprehension

STRATEGY

- This strategy involves maintaining L1 language instruction in Math, while using clarifications for transitioning to L2.



Bilingual Pedagogical Theory

(Lara-Alecio and Parker, 1994)

Consists of four dimensions:

- ☞ Language Content
- ☞ Language of Instruction
- ☞ Communication Mode
- ☞ Activity Structures



Verbal Expression
Reading Reception
Aural Comprehension
Written Communication

COMMUNICATION MODE

- I. Content Presented in L1*
- II. L1 Introduces L2*
- III. L2 Clarified by L1*
- IV. Content Presented in L2*

LANGUAGE OF INSTRUCTION

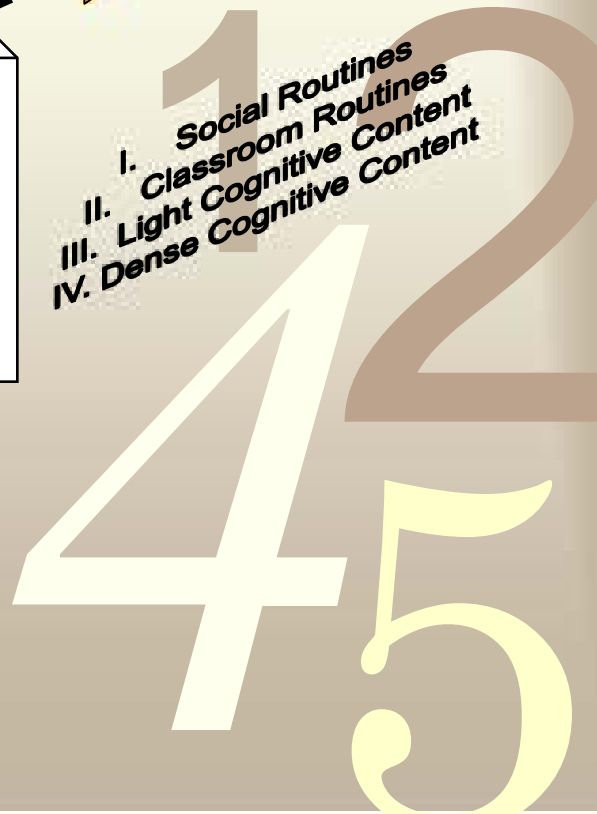
LANGUAGE CONTENT

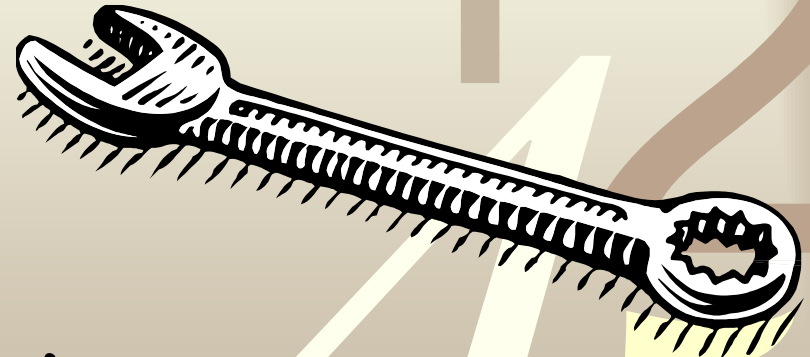
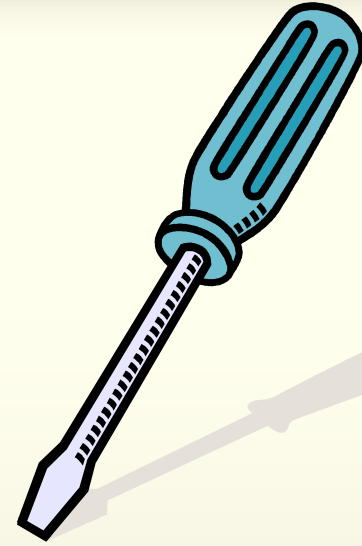
Time

- I. Social Routines*
- II. Classroom Routines*
- III. Light Cognitive Content*
- IV. Dense Cognitive Content*

Academic and Non-academic Activities

Transitional Bilingual Pedagogical Model/Theory
(Lara-Alecio & Parker, 1994)





Rafael's Story: The Constructor's
Tools (An Example of Clarifications
in Action)

Examples

The Cowboy Mouse with
Clarifications (Storyretell for
English Language and Literacy
Acquisition)

Math Clarifications from DLM

