Building Successful SLIFE Math Numeracy Assessments: Using the Apollo 13 Approach

June 1, 2017
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Agenda

★ SLIFE Numeracy Assessment Protocol Project
★ SLIFE Numeracy Definition
★ The Apollo 13 Metaphor
★ 4-Step Protocol & Numeracy Skills Progression Chart
★ Sample Assessment- The Calibration
SLIFE Assessment Protocol

Project

★ Expansion in response to SLIFE Guidance document from the field
★ How do we assess numeracy skills for potential SLIFE?
Numeracy Skills Assessment

★ SLIFE Identification Criteria

“Administer native language literacy and numeracy assessments (if possible) to determine if the student is academically functioning two or more years below expected grade level relative to typical peers.”

- SLIFE Guidance, p. 7, 9
Numeracy Skills Definition

Students can demonstrate and apply grade level basic and computational skills by identifying and understanding numbers, performing simple arithmetic operations, and comparing numerical magnitude.

Adapted from “How numeracy influences risk comprehension and medical decision making” Reyna, V. F.; Nelson, W. L.; Han, P. K.; Dieckmann, N. F. (2009). Psychological Bulletin. In consultation with Andrew Chen (assisted with new mathematics frameworks)
Apollo 13 and the SLIFE Journey - What is the Connection?

Journey interrupted

Problem solving square peg in a round hole

Acculturation
Apollo 13: The planned journey
K-12: The planned journey

K to 12 is Kindergarten and 12 years of Basic Education.

- Kindergarten (5 years old)
- Grade 1 (6 years old)
- Grade 2 (7 years old)
- Grade 3 (8 years old)
- Grade 4 (9 years old)
- Grade 5 (10 years old)
- Grade 6 (11 years old)
- Grade 7 (12 years old)
- Grade 8 (13 years old)
- Grade 9 (14 years old)
- Grade 10 (15 years old)
- Grade 11 (16 years old)
- Grade 12 (17 years old)

6 years of Elementary

4 years of Junior High School

2 years of Senior High School
Journey Interrupted: making the final destination mission critical
Journey Interrupted: making the final destination mission critical
Challenge? How to fit a square peg in a round hole?
Challenge? How to fit a square peg in a round hole?

1 2 3 + = A B C

Numeracy skills
Rising to the challenge: Using existing resources and adaptation

Cardboard cover from flight manual
Plastic wrap
Spare hose pipe
Rising to the challenge: Using existing resources and adaptation

Numeracy Skills Progression Chart
Acculturation
**SLIFE Numeracy Skills Assessment Protocol**

- Identify Grade Level and Domains by student’s age
- Determine Progression
- Adapt/Develop Numeracy Assessment
- Assess Skill Level

**Numeracy Skill Assessment Activity Scenario**

- **Student age:** 10 years
- **Expected grade level:** MA grade 4

**Language & Culture Considerations:**
Low incidence language; limited information on previous academic experience

**Numeracy Progression Chart**

- **Domain(s) assessed:**
  - Operation & Algebraic Thinking
  - Number & Operations in Base Ten
  - Number & Operations – Fractions
  - Measurement & Data
  - Geometry

**Materials:**
- Numeracy Skills Progression Chart
- MA Mathematics Framework
- Base ten manipulatives
- Activity mats
- Proctor record sheet
### Numeracy Skills Progression Chart

#### PK - K - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8

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- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors, multiples.
- Generate and analyze patterns.
Sample Assessment: The Calibration

★ Introduce materials
★ Participants gain familiarity with materials
★ Calibration activity
★ Discuss and gather feedback
Thank you for taking this journey with us and moving this work forward!

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