Modified Schema Based Instruction Targeting Ratio and Proportion Problem Solving of Secondary Students with Intellectual Disability

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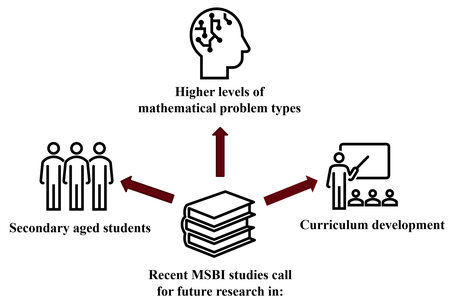
Background / Purpose



For students with ESN, experts agree that a high-quality education leads to a better wellbeing (Spooner & Browder, 2015; Taber-Doughy, 2015)

Academic achievements made in secondary schooling predict future success (Nasamran et al., 2017)

In recent literature, MSBI has been established as a method for teaching mathematics to students with ESN following an evidence-based model (Root et al., 2021)

With support, students with ESN can learn mathematical knowledge and skills aligned with their grade (Courtade et al., 2014; Spooner, McKissick, & Knight, 2017)

Research Question

What is the effect of modified schema-based instruction on ratio and proportion mathematical problem-solving behaviors of secondary students with intellectual disabilities?

Participants & Setting

Secondary high school located in the southeast region of the United States

Phillip
- 10th grader
- Male
- White
- ID & Speech and language impairment

Aaliyah
- 9th grader
- Female
- Black
- Intellectual disability

Esteban
- 10th grader
- Male
- Hispanic
- ID& Speech and language impairment

Jayla
- 10th grader
- Female
- Black
- Intellectual disability

Method

Phases

Baseline → Intervention → Maintenance

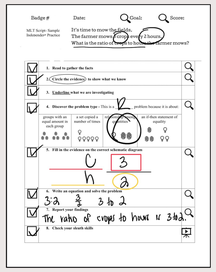
MSBI Evidence Based Practices

- Explicit Instruction
- Technology Aided Instruction
- Systematic/ Graphic Organizer
- Task Analysis
- Schema-based Instruction

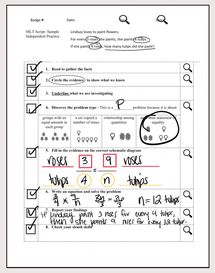
Non-concurrent Multiple Baseline

Materials

- Self-reflection folders
- Theme menu
- Worksheets
- Scripts
- Word walls
- Various instructional tools



Ratio worksheet



Proportion worksheet

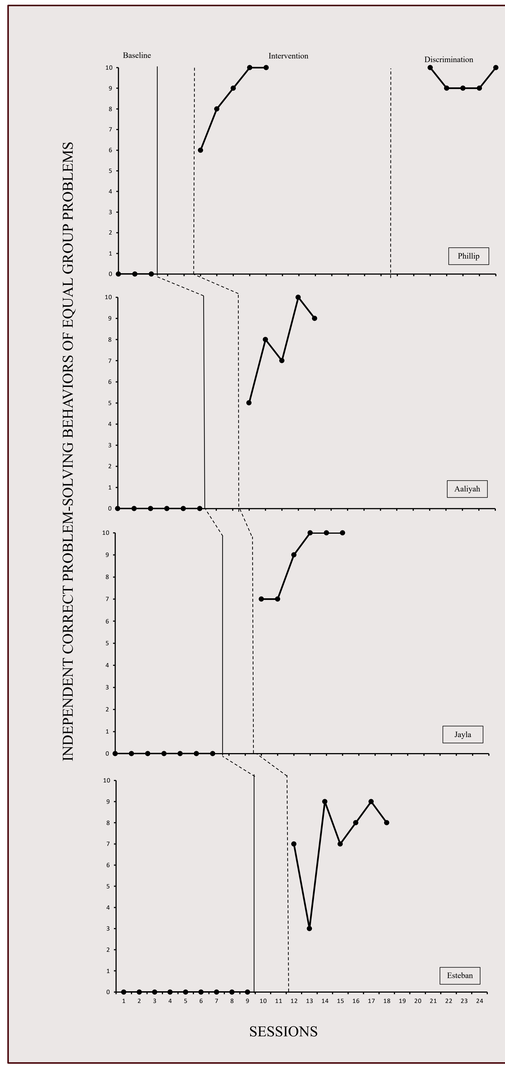
Procedures

Multiple Schema Based Instruction (MSBI)

Baseline + **Distal Measure**

- Two days of Ratio Instruction
- Ratio MSBI Intervention
- Distal Measure and Probe
- Two Days of Proportion Instruction
- Proportion MSBI Intervention
- Distal Measure and Probe
- Two Days of Discrimination Instruction
- Discrimination Intervention
- Maintenance (if applicable)

Results



The graph displays the progress in correct problem-solving behaviors for 4 students who participated in the study

As sessions progress the aptitude to solve ration and proportion problems increases

Progress exhibits an upward trend after intervention period

Limitations & Future Research

- Expansion of systematic & explicit instruction
- Naturalistic Intervention
- Naturalistic Settings
- Evaluate generalization & maintenance of R/P skills
- Supporting learning progression: Acquisition, Fluency, Generalization, Maintenance

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References & more material

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