



Modified Schema-Based Instruction: Problem Solving of Middle School Students with Intellectual Disabilities

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ABSTRACT

Under the supervision of Dr. Jenny Root, the General Curriculum Access (GCA) laboratory works to create strategies for teaching mathematical skills.

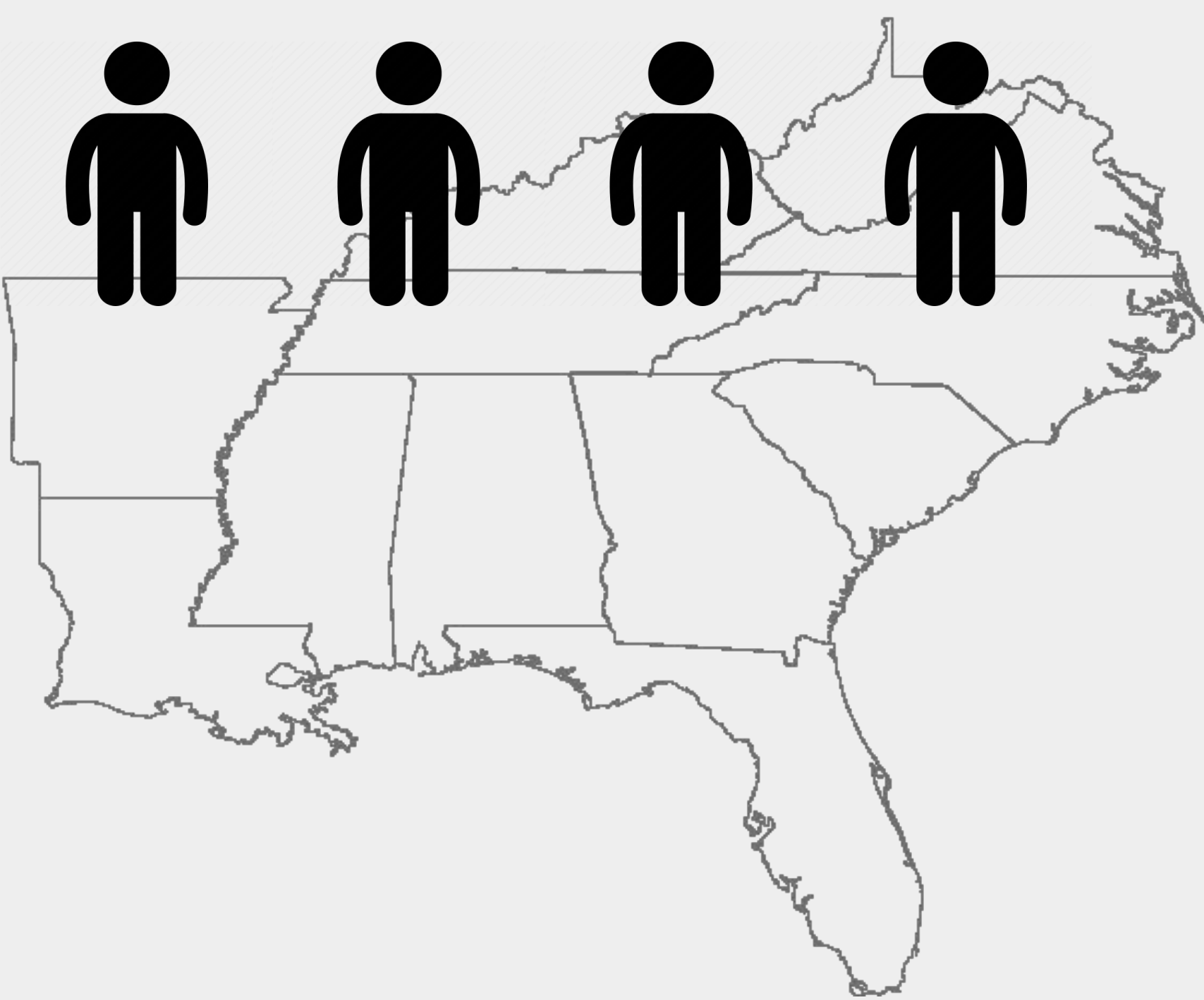
The ongoing study focuses on instructional methods to encourage academic learning for students with autism and intellectual disability. MSBI has been acknowledged as a teaching method for students with ESN following an evidence-based model (Root, et al., 2021). The research study consists of three phases: baseline, intervention, and maintenance. For this project, worksheets have been developed to critically teach and test necessary skills to eligible participants. The worksheets consist of three stages: acquisition, fluency, and generalization. They are further broken down into model, guided, and independent. Word problems embedded within the worksheet have been carefully written to ensure comprehension of the task being asked and include various mathematical topics such as ratio and proportion.

Results are underway, however, the research aims to increase real-world mathematical problem-solving skills in students with intellectual disabilities and support that students with ESN are able to learn mathematical knowledge aligned with their grade level (Courtade et al., 2014; Spinner, Mckissick, & Knight, 2017).



What is the effect of teacher delivered modified schema-based instruction on mathematical problem-solving behaviors of middle school aged students with intellectual disabilities?

RESULTS



PARTICIPANTS

Participants were students at middle schools located in the southeast region of the United States. Participants with diverse ethnic backgrounds all had intellectual ability and/or language impairment. Participants had documented an ongoing struggle with mathematics.

METHODS

RESEARCH DESIGN

This study utilized a multiple baseline design. It includes the following phases:

Baseline

Intervention

Maintenance

Explicit Instruction
Model, guided, independent

Technology aided instruction
calculators, virtual manipulatives

Schematic organizer
Graphic organizer

Task analysis

Schema-based instruction

WORKSHEETS

Acquisition → Participant learns a skill.

Model → Instructor teaches skill.

Fluency → Participant is able to fluently do the skill. Solution is solved at a natural rate.

Guided → Instructor guides participant in skill.

Generalization → Participant is able to solve the worksheet without prompts.

Independent → Instructor observes participant independently solving a skill.

Name	OOX
Sasha and Grace met up at the arcade to play games together. What is the ratio of tickets Sasha's won to tickets Grace's won if for every 1 ticket Sasha won, Grace won 3 tickets. Write the ratio in 3 ways.	
<input type="checkbox"/>	1. Read to gather the facts.
<input type="checkbox"/>	2. Circle the evidence to show what we know.
<input type="checkbox"/>	3. Underline what we are investigating.
<input type="checkbox"/>	4. Discover the problem type - This is a _____ problem because it is about: _____
<input type="checkbox"/>	5. Fill in the evidence on the correct schematic diagram.
<input type="checkbox"/>	6. Write an equation and solve the problem.
<input type="checkbox"/>	7. Report your findings.
<input type="checkbox"/>	8. Check your sleuth skills.

Fig. 1 Example of independent worksheet for Generalization



SCAN QR CODE FOR MATERIAL EXAMPLES AND REFERENCES

Independent (correct) Problem-Solving Behaviors: Equal Group Problems

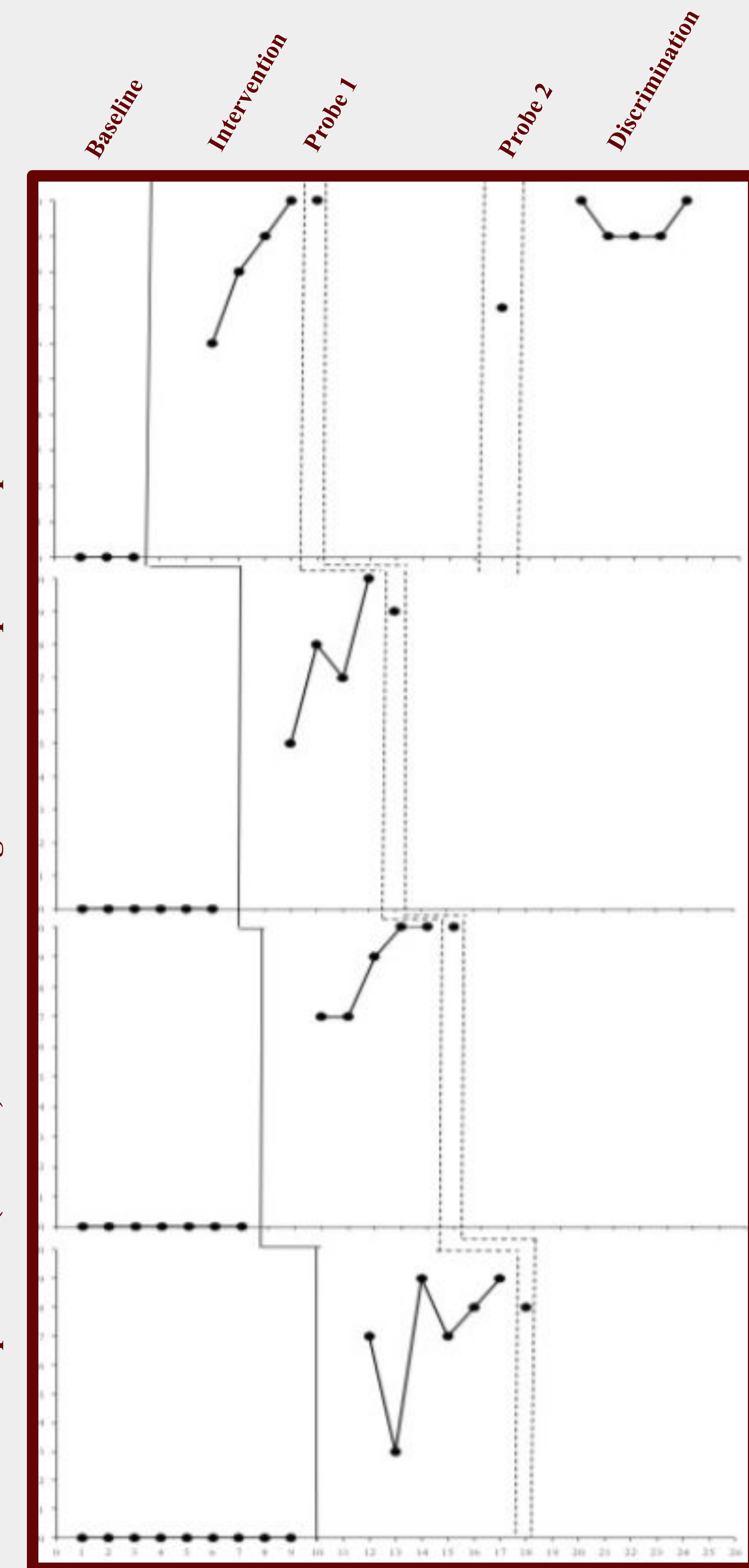


Fig. 2 Graphs of participant procession in equal group problem sets

Each graph represents a participant.

The graphs showcase progress in correct problem-solving behavior in each of the participants.

As sessions progress, the participants show an increase understanding of the material.

After intervention period, progress shows an upward trend, noting process in the skill.