

IMPROVING HEAD START TEACHERS SENSE OF SELF-EFFICACY USING INCLUSIVE STEM PRACTICES

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Introduction

- Children with disabilities, and those from low-income families, are often denied opportunities to engage in STEM activities (Clements et al., 2021).
- Recent census data report that large percentages of preschool-aged children with disabilities remain in separate classrooms despite recommendations favoring inclusion (Clements et al., 2021).

Research Question

1. Do Head Start teachers increase the number of inclusive STEM opportunities following targeted professional development (PD) and on-going support using Networked Improvement Community (NIC) meetings?
2. Do Head Start teachers indicate higher levels of self-efficacy for inclusive practices in STEM education following targeted PD and on-going support using NIC meetings?

Methodology

Participants:

- 10 Head Start teachers in the state of Maryland.
- Years of experience ranged from five to 31.
- All were experienced teachers.

Table 1

Outline of the three-phase project.

Phase	Description	Key activities
Phase 1	Observations of inclusive STEM practices in 10 classrooms	Collect baseline data on inclusion and STEM opportunities Conduct two focus groups to determine teachers' strengths and needs
Phase 2	4-day PD focused on evidence-based inclusive practices and STEM teaching and learning for young children	Develop PD based on teachers' reported and observed needs Practice teaching in a campus preschool
Phase 3	Targeted observations of participants in their Head Start classrooms post PD (Post-test)	Observe and assess the implementation of PD in participants' classrooms

Before the post-test, three NIC meetings were conducted to address areas of need identified by the participants.

Four independent measures were used to assess teacher beliefs, practices, and efficacy for inclusion and STEM teaching:

1. The Inclusive Classroom Profile (ICP),
2. STEM Instances Tracking Form,
3. Teacher Self Efficacy Scale,
4. Inclusion Beliefs Survey.

Data were collected baseline; during summer PD; following academic year.

Results

Initial qualitative analyses found that:

- Head Start teachers wanted to improve inclusive STEM teaching.
- They easily replicated examples during professional development, but not in their own classrooms.

- Teachers were more likely to integrate a STEM-themed, dialogic reading opportunity than a spontaneous STEM activity/conversation (e.g., prompting engineering themes in a block center) or preplanned STEM lesson.
- When spontaneous opportunities occurred, they were more likely to be related to mathematics than science, technology, or engineering.
- The few preplanned STEM lessons were typically mathematics or science-themed.

Implications

- Head Start teachers desire and need more support in providing STEM learning opportunities to young children.
 - Targeted PD needs to focus on integrating inclusive STEM into required curricula.
 - On-going support in engaging in spontaneous conversations with children around STEM related themes and ideas.
- As classrooms continue to become more diverse, teachers want to improve their practice and need continuous support and coaching in doing so, especially given the curriculum requirements of their agencies.

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