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UNF STARS 2023 Poster Presentation: “Fostering Student Motivation in Urban Title I Elementary Schools: Integrated STEM for Equitable Learning Experiences”

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INTRODUCTION

Background & Purpose

- **Increased enrollment:** 50.4 million + projected 36.1% increase by Fall 2027 in elementary schools in U.S.
- **Preparation for diversity** of student backgrounds and needs for success
- **Deficit-based narratives** about urban schools persist, with less focus on asset-based narratives
- **STEM access** to some students (excluding/disenfranchising students of color)
- **STEM as meta-discipline** to provide rigorous learning experiences; ongoing sense-making
- **Recommended approaches** to equity are to provide more opportunity and access to high quality STEM education—expanding what is meant by STEM learning
- **Rich, descriptive examinations** of elementary teachers' integrated STEM classroom instructional practices connected to motivational processes to improve student outcomes in urban schools

Project InTERSECT

Our study is based on our roles in this federal grant program.



Project Inquiry to Transform Educator Readiness for STEM+C Early Childhood Teaching

DCPS Urban, Title I/High Needs

Enhance PK-2 teachers' pedagogical content knowledge & STEM Integration

Dosages: Teacher Leader, PD, & Badge
Online Coursework: Computational Thinking, Mathematics, Engineering, Integrated STEM, & Classroom Inquiry



Access QR code to learn more

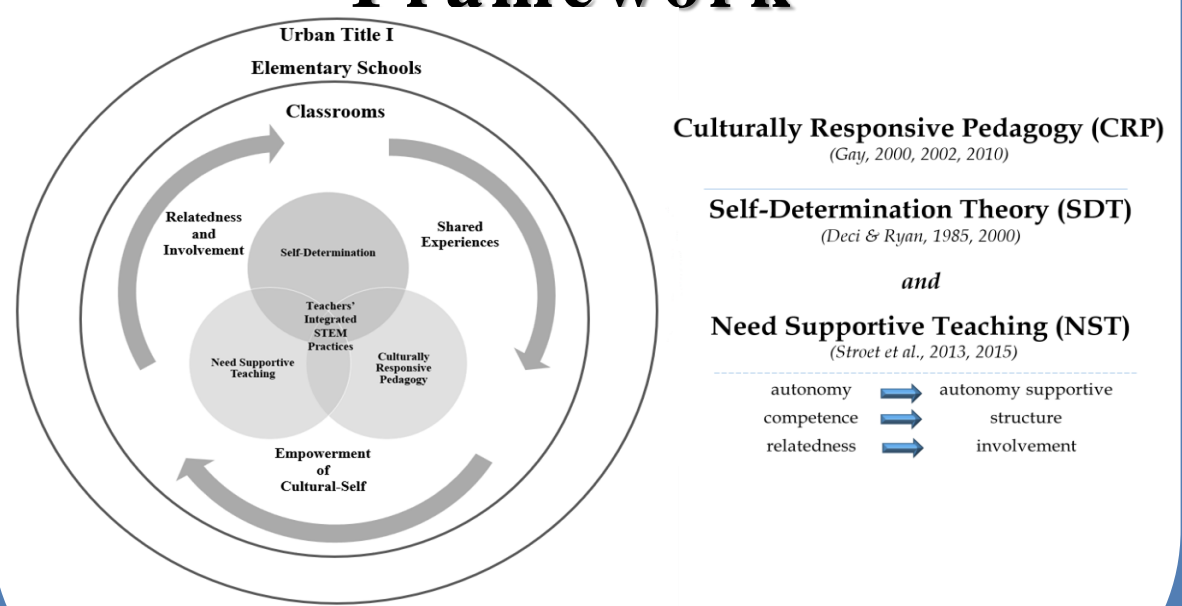
Research Questions

How are teachers' integrated STEM instructional practices supportive of fostering students' motivation for learning in urban, Title I elementary schools?

RQ1a. To what extent do teachers' instructional practices align with positive dimensions of need supportive teaching?

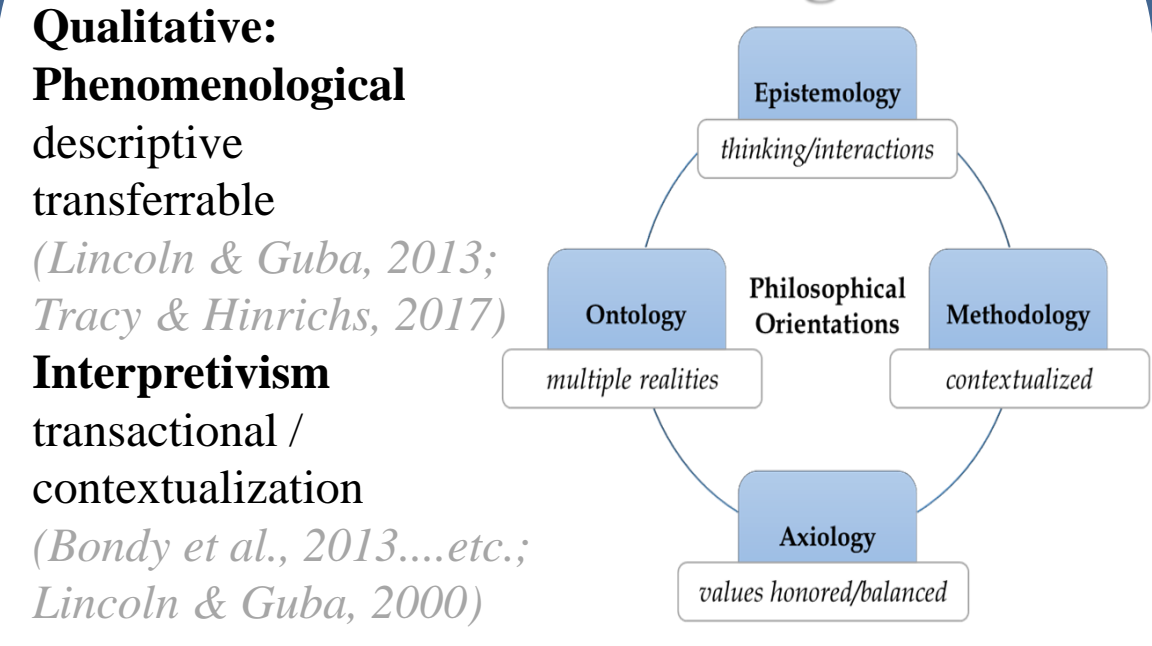
RQ1b. In what ways do teachers' instructional practices honor their students' cultural backgrounds?

Integrated Theoretical Framework



METHODS

Research Design



Data Collection



Teacher Integrated STEM Classroom Videos (with Inquiry-Based Teacher Reflections)

Teacher Integrated STEM Classroom Videos

- Swivl videotaping kit
- Teacher-selected lessons
- Ongoing inquiry-based reflections
- Three, two-hour videos per teacher

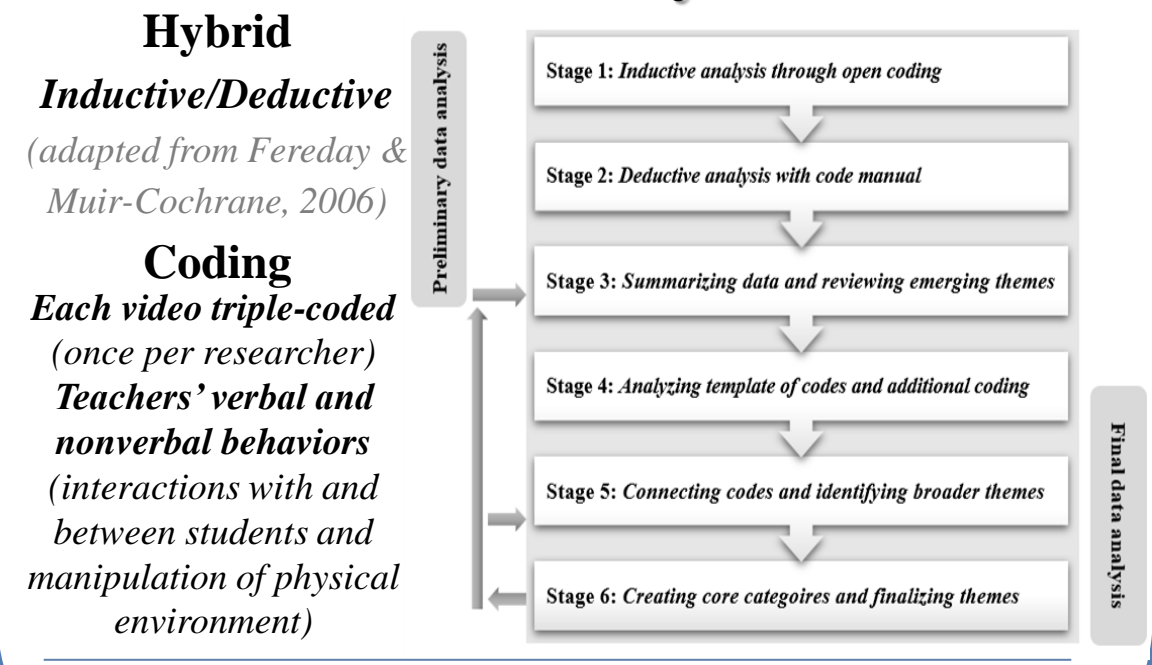
Inclusion (3 criteria): Program's eligibility requirements, last semester of coursework, and assignment/videotaping requirements

Exclusion (4 criteria): Not teacher of record, re-assigned position, school transfer, ceased employment

All teachers enrolled in Teacher Leaders dosage

Teacher	Race/Ethnicity	Grade Level	Current Title I School Name	Current School Type
Cathy	White/Caucasian	Kindergarten	Gardenia Elementary	Public/Charter
Monica	White/Caucasian	1st	Rose Elementary	Public/Neighborhood
Alicia	Black/African American	2nd	Lily Elementary	Public/Neighborhood

Data Analysis



Reflexivity Debrief Meetings

(Konradi et al., 2016; Saldaña, 2015; Schippers et al., 2015)

FINDINGS

Themes

Our findings are organized into three major themes with corresponding subthemes. We showcase a series of exemplar data from each of the teachers to illustrate our findings.

Provisions of Guidelines and Various Materials

- Clearly Articulating Objectives and Expectations
- Supplying Openly Accessible Technology

Monica 1st grade

"You are going to **create your own drawing** of grandma's cottage and **create your own path** to get past all of the obstacles (the forest, the river) and make it **like a map**."

Think about **your own directions** for how you would tell someone how to get there. **First, next, and last.**"

- Alphabet/tile rug
- Labeled props made from paper products (e.g., grandma's house, wolf cutout, river, forest/trees, and directional arrows)
- Colored pencils
- Crayons
- Traditional pencils
- Paper notebook
- Bee-Bot Programmable Robot

Tactfully Posing Thought-Provoking Questions and Statements

- Prompting Reflection on Classroom Learning Experiences
- Connecting to Students' Community-Based Lived Experiences

Prompting Reflection
"Who would like to tell me one thing that they **liked**? Does **anyone have a suggestion** for what we can do **next time**?"

Cathy Kindergarten

Lived Experiences
"Have you ever had to go to someone's house in **your neighborhood**? Have you ever had to tell someone how to get there? Why would the order be important?"

Monica 1st grade

"Sometimes we as coders and learners are **faced with bugs or problems every day**. It could be on our computer, or it could be in our classroom. Student D shared that he has when **working with a Rubik's cube**. Student R talked about a problem she faced when **building a birdhouse**."

Alicia 2nd grade

Encouraging Collaborative Problem-Solving Between Students

- Recommended Students' Peers as Models
- Emphasized Students' Peers as Thought Partners

"They're **not looking at it to criticize you**. They are looking at it to **help you**. It is going to allow you to debug your algorithm. It means **making corrections, changes, and making it better.**"

Cathy Kindergarten

"Let's have some **volunteers**. Student A, will you be the **programmer**? The programmer is someone who designs the program. Student J, will you be the **tester or bot**?"

Monica 1st grade

"What are some **corrective feedback** that we can give Student D? What are some things we would like Student D to work on when we work on this project again?"

Alicia 2nd grade

CONCLUSION & DISCUSSION

This study offers insight into how teachers' integrated STEM instructional practices are supportive of fostering students' motivation for learning in urban, Title I elementary schools, which serves as a counter-narrative to the deficit perceptions regarding urban schools, their teachers, the students, and community they serve. The teachers' responsiveness to broader classroom dynamics demonstrates how teachers can honor, respect, and learn with their students—building on their practices to include students in decision-making and knowledge integration to facilitate integrated STEM learning experiences. As the teachers challenged students to learn collaboratively, we also begin to better view students as co-creators and co-directors of learning (McWilliam, 2008; Wallace et al., 2014; Wiggan & Watson, 2016), coordinating positive, dimensions of need supportive practices with students (Hachfeld et al., 2015; Hoglund, 2015; Reeve, 2016). Through examining teachers' practices, we further clarify and expand understanding and conceptualization of integrated STEM, as we improve student motivation by attending to students' capabilities, which contributes to providing equitable learning experiences for all students (Gay, 2018; Mensah, 2021).

Limitations & Future Directions

Teacher Videotaping Training
→ Continuation of Emailed Logistics & Course Credit Reminders

Member Checking
→ Follow-Up Interviews, Teacher Reflections, & Student Data

Academic School Years
→ Differences of Post-COVID Restrictions within and between Classroom and Schools

Extent of Program Allowances
→ School-Wide Program

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