

# Curricular Adaptations by Paraprofessionals during their Computer Lab Instruction using Block-based Coding

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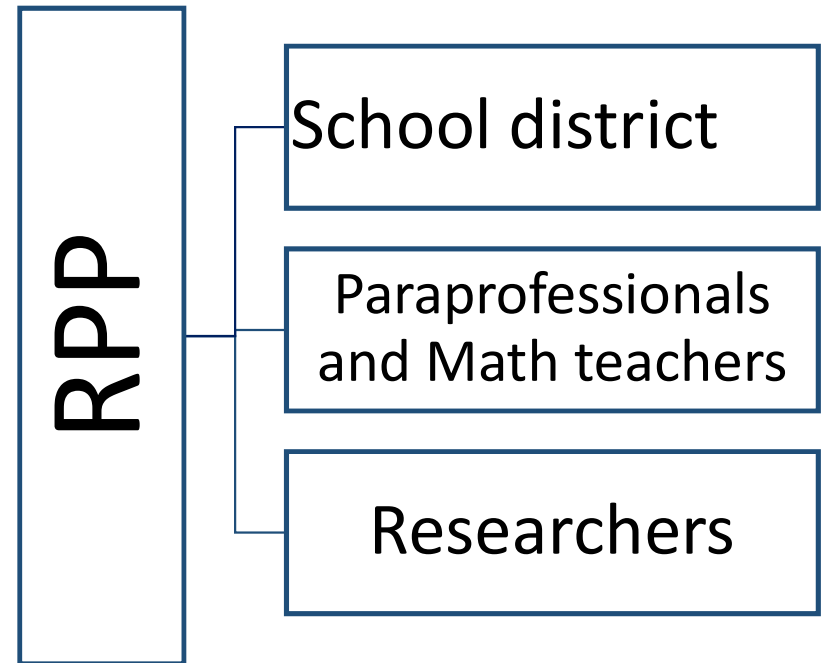
Instructional Technology and Learning Sciences

Utah State University

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# Overview of the project

- Computer science (CS) and school curriculum
- CS and Mathematics
- Research –practice partnership (RPP)



# Research Questions



- RQ: How do paraprofessionals modify and adapt the lesson plan during computer lab implementation?

# Methodology

- Study Basics:
  - Elementary school: 5<sup>th</sup> grade
  - 3 paraprofessionals and 2 Math teachers
  - 90+ students

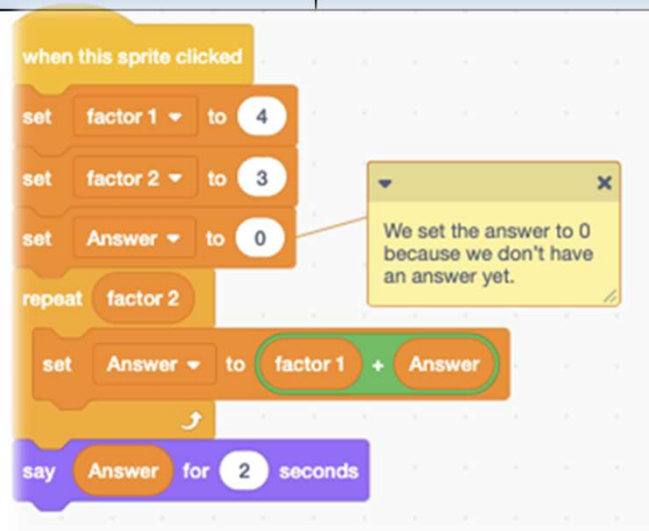


## Phase I

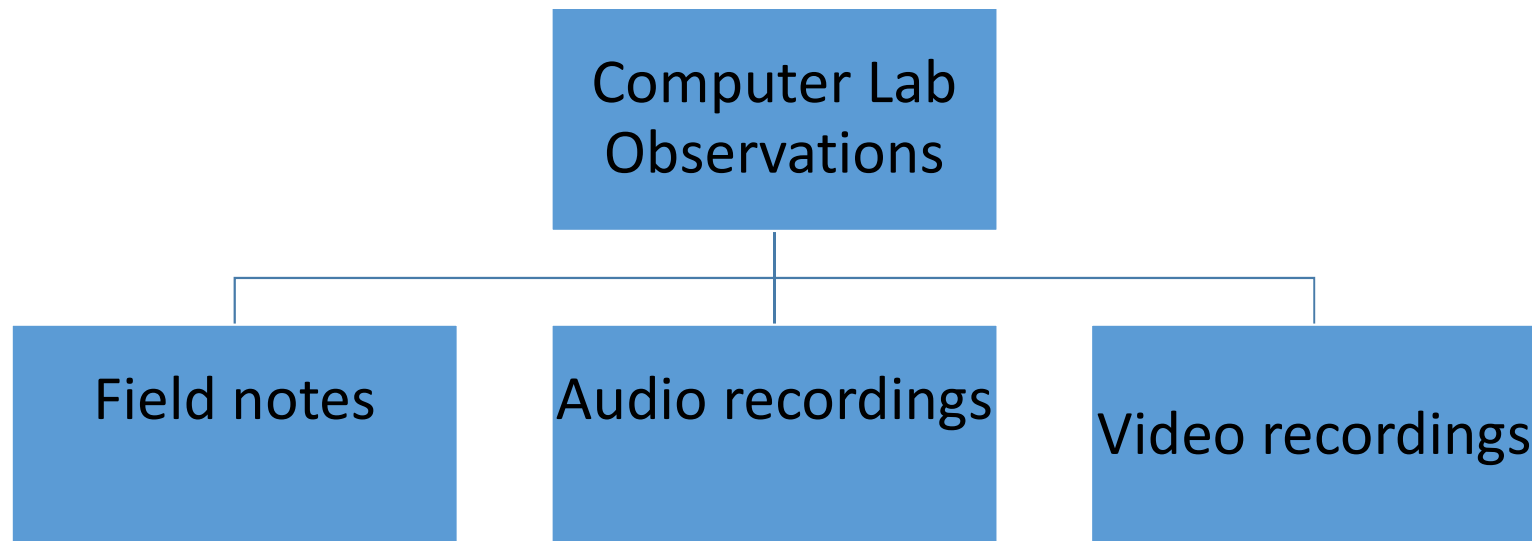
- Co-designing of lesson plans with Math teachers, paraprofessionals and researchers
- Selecting the Math topic for the Scratch coding

## Phase II

- Implementation of lesson plans by paraprofessionals
- Paraprofessionals making modifications and adaptations in the existing lesson plan while implementing with the students.



# Data collection and Analysis:



# Findings:

Initial findings: paraprofessionals did modification while implementing the lesson plans in the computer lab instruction time.

An example of modification is as follows:

- Representation: Instructor representing example by drawing stacks of lines on the white board to show the difference between the math problems.
- Lack of confidence: “I am not a math person.”

Code	Sub-code	Defining codes and sub-codes	Example
<b>Modification</b>	Example	Specialists deviates from the script and modifies the lesson plan using an example to enhance students' understanding.	"what if I have four bushels or four boxes that have three apples? And I reverse and have three boxes with four apples? Are they the same? are not are they?"
	Representation	Specialists deviates from the script using representation of the example by drawing, writing on the white board.	<div style="border: 2px solid brown; border-radius: 15px; padding: 5px; display: inline-block;">           Instructor representing example by drawing stacks of lines on the white board to show the difference between the math problems.         </div>
	Explanation	Specialists deviates from the script by explaining and clarifying the terminologies, functions.	"So, so here we have our answer, which is set to zero because we're going to start with zero. Here we have set answer to answer plus four, which means zero plus four, right?"



<b>Math confidence</b>	Lack of confidence	Displays the lack of confidence in Math concepts.	<b>"I am not a math person."</b>
<b>Adaptation</b>		Adaptations are the slight changes made to the script while implementing with students.	<p>"Now, exponents are completely different, right? We can't reverse the numbers. They always have to be the same. So keep that in mind. Keep that in mind because we're going to get we're going to get now we're going to talk about scratch."</p> <p>"Did you see the difference? What's the difference? What was the difference? Explain that to me."</p>
<b>Class management</b>			<p>"Are you tired of paying attention because you're going to be doing this. Okay. So pay attention."</p>

# Recommendations:

- To measure student achievement.
- To expand the study to other inter-disciplinary subjects as well.
- Expand the study by covering more paraprofessionals, teachers and students.

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Thank you

Questions?

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