

Expansive Framing and Collaborative Professional Development: Supporting Teacher Learning

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ABSTRACT

This poster presents preliminary findings from a study of four elementary-level teachers participating in a collaborative PD accompanying a CS instructional unit of seven lessons. The unit introduces students to CS concepts through an expansive framing approach utilizing board games. Through analysis of discourse, the PD and expansive framing approach appeared to support productive teacher talk that enhanced teachers' learning and enactment of the unit.

CCS CONCEPTS

• **Applied computing** → **Education** → Collaborative learning

KEYWORDS

Elementary School Coding, CS unplugged.

1 INTRODUCTION

With the demand for increased CS instruction in schools, elementary teachers with limited background in the subject are increasingly asked to teach it. Professional development (PD) is often used to address such gaps. An emerging approach called "collaborative PD" is defined by making teachers active participants. Not much is known about how to structure collaborative PD to support productive pedagogical talk [1] that encourages teacher agency and sense-making while also influencing subsequent classroom practice.

2 BACKGROUND

This poster presents preliminary findings from a study of four elementary-level teachers participating in collaborative PD developed to accompany a CS instructional unit of seven weekly lessons. This unit uses an expansive framing (EF) model [2] to frame a familiar "unplugged" context (board games) as a

computationally rich learning space by expanding that framing to the Scratch programming environment. Students are first introduced to CS concepts in the context of playing a board game called *//CODE: On the Brink*. Students then program their own levels for the game in Scratch. We report on how the EF approach, coupled with collaborative PD, helped *teachers* learn CS content.

3 METHODS AND RESULTS

The collaborative PD was structured to promote discourse among participants by: 1) reflecting on classroom activities, 2) modeling the lessons, and 3) suggesting adaptations to the lessons. We analyzed the discourse of four teachers during the PD and during their classroom implementations throughout the unit. We examined these PD episodes for evidence of teacher learning and sense-making and traced how these discussions served as bridges between PD sessions and classroom implementations. We found that teacher discourse about foundational CS concepts (e.g., procedures) during PD was often grounded in the Scratch version of the board game, illustrating how expansive framing with the board game and Scratch supported teacher sense-making by helping them make connections across contexts. We also found that teachers' use of such CS concepts in the classroom became more developed and accurate after such conversations.

4 CONTRIBUTIONS AND FUTURE WORK

Future work in our study will examine how expansive framing, used as an instructional approach, can contribute instructional design guidelines to help teachers with little CS background who are increasingly tasked with teaching CS.

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