

# Building Computational Thinking Through Teaching of Computer Programming: An Evaluation of Learning Centers in China

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## Problem of Practice 1

There is a lack of computational thinking being taught and cultivated through programming education, with programming a common approach and an important way to integrate computational thinking (Lye & Koh, 2014; Selby, 2012, 2014).

## Focus of Study 2

Ango Coding:  
Private company established in 2015 with headquarter in Shanghai, China.  
Provides STEM & coding programs for students from age 5-12.  
Has 42 learning centers, 500 computer programming teachers, 5000 students nation wide.

## Research Questions 3

1. What is the teachers' knowledge and motivation related to achieving the goal of incorporating computational thinking skills in all programming course curriculums and becoming a model for early age programming education?
2. How does the organizational culture and context of Ango Coding Company facilitate teachers' knowledge and motivation?
3. What are the recommendations for organizational practice in the areas of knowledge, motivation, and organizational resources?

## Solutions 6

1. A Comprehensive Recruiting Plan
2. A Systematic Training Program for All Teachers Through Online Platform with a Cohesive Teaching Evaluation Plan
3. An Updated Curriculum that Integrates Computational Thinking

## Findings 5

Knowledge	Motivation	Organization
<b>Validated-Current Asset</b> <ul style="list-style-type: none"><li>Teachers have awareness of related skills sets</li><li>Teachers demonstrate efforts to reflect on teaching</li></ul> <b>Contuning need</b> <ul style="list-style-type: none"><li>Teachers show basic, not systematic, understanding of CT concepts</li><li>Teachers lack in-depth understanding of pedagogy</li></ul>	<b>Validated-Current Asset</b> <ul style="list-style-type: none"><li>Teachers believe CT skills are valuable</li><li>Teachers believe in their ability to prepare for CT teaching</li><li>Teachers are willing to continuously update their lesson plans to meet needs</li></ul>	<b>Validated-Current Asset</b> <ul style="list-style-type: none"><li>The company does cultivate a culture of willingness for improvement</li><li>Leadership needs to be trusted in transition to new models of learning</li></ul> <b>Contuning need</b> <ul style="list-style-type: none"><li>The company needs to provide curriculum updates and additional opportunities for training</li></ul>

## Research Methods 4

Participants: full-time employed teachers with experience over 6 months.

Survey

- n=61
- response rate 82%
- 9 questions

Interview

- n=8
- 12 questions, 30 - 50 minutes each
- online interview