Educator Preparation Programs Spring Summit

Building Capacity for Preservice Computer Science Education

INDIANA UNIVERSITY BLOOMINGTON

Thanks for showing up!

Welcome

Who Is Here Today?

- On your phone or laptop, type in this link or use the QR code to reach our shared map.
- When logged into Google, you should be able to add a pin to the map. Add a pin; under "Description" please write your name and the organization/school you represent.

https://bit.ly/BCPCS

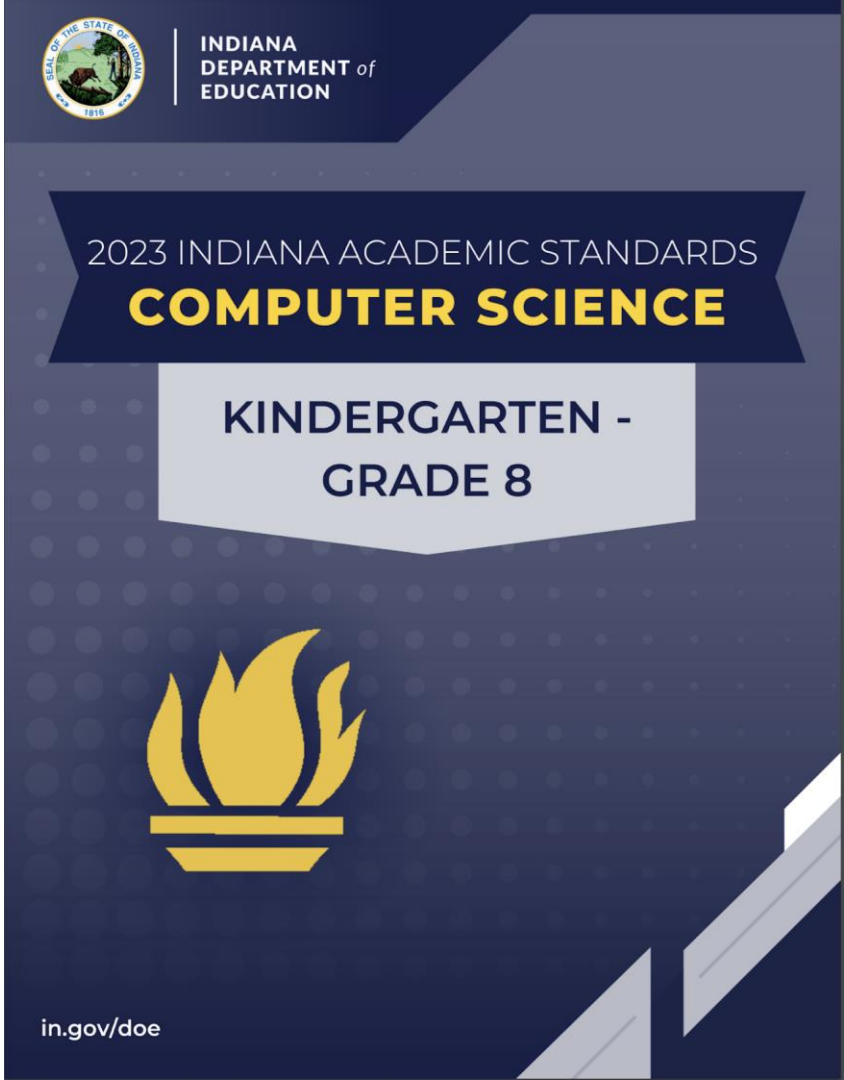
Why Are We Here?

Table Talk

In which course(s) in your program are K-8 preservice teachers introduced to the Indiana Computer Science Standards?

*Thinking about **integration**, how are your K-8 preservice teachers equipped to practice these two overlapping but different concepts:*

- *Integration of technology into content instruction*
- *Integration of the CS principles and practices into content instruction*



How Far Have We Come?

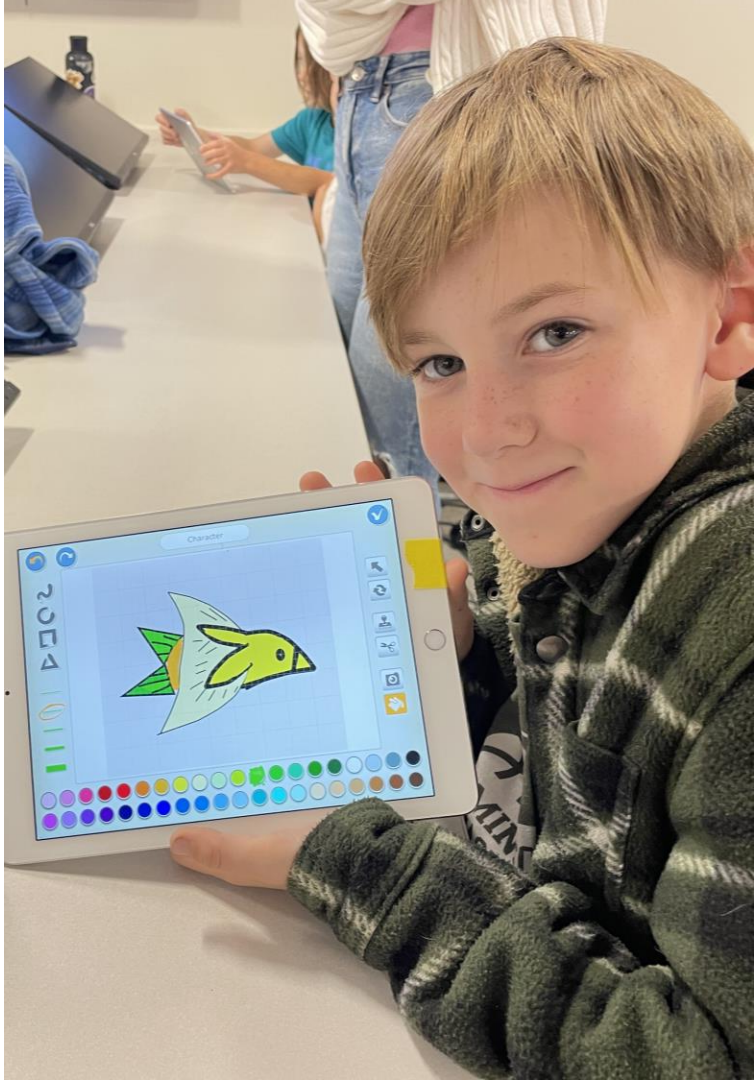
Video link

What's on the Horizon?

Video link

Why Are We Here?

- To consider the “state of the state” regarding CS prep in our EPPs;
- To learn about current and upcoming initiatives at the IDOE around CS in K-8;
- To share practical ideas for addressing CS prep in our EPPs;
- To think collectively about future direction around CS competencies for our K-8 preservice teachers.



What has been discovered?

Needs Analysis Report

Needs Analysis

1. **Purpose:** To examine the needs of elementary teacher education programs in Indiana with regards to integrating Computer Science (CS) standards/content into their curricula

2. **Method:** 5-item survey and 30-minute semi-structured interviews

    - 97 teacher educators representing 53 elementary teacher education programs in Indiana

    - Interviewed six faculty members representing four elementary teacher education programs in Indiana

Survey Results

- 30 respondents (approximately 27% response rate)
  - Initial interviewees identified and 6 faculty members interviewed
  - Additional curriculum resources obtained (Syllabi, sample lessons, etc.) - *still analyzing*
- Expanding survey deployment to Ivy Tech faculty

Survey Results: Summary

Question Items	Responses
Covering the Indiana K-8 CS standards in Elementary Teacher Education Program	*78% indicated "yes", 16% "no"*
Covering the Indiana K-8 CS standards in courses/experiences required for teacher ed.	*82% indicated "yes"*
How the Indiana CS K-8 standards are covered	*Methods courses 54% (Science and Math 71%)* *Educational technology 35%*

Survey Results: Summary

Question Items	Responses
Curriculum resources used	Specific: *Code.org (16%); Scratch (14%); Hour of Code (10%)* Strategies: *Plugged activities (14%); Unplugged activities (12%); Integrating into field experiences/practicum (12%)*
Barriers	Teacher Educator barriers: • Lack of time (20%); Lack of faculty with CS knowledge (14%); Lack of faculty interest (11%); Lack of professional development opportunities (9%) Preservice teacher barriers: • Lack of awareness of importance of CS (11%); Lack of opportunities to integrate CS during student teaching (11%)

Interview Results

1. What are the **strategies** used to teach and integrate CS and CT in elementary education programs?

2. How do elementary education programs provide **authentic CS and CT experiences** to their preservice teachers?

3. What are the **challenges** elementary education programs face when teaching and integrating CS and CT into their programs?

Interview Results: Strategies

They take an existing folk tale, and they use … choose your adventure builder. … They learn about how things are abstracted, … CT (FA02, line 36-40)

I try to connect with creative computing out of Scratch (FA04, line 25-26)

Unplugged activities, Code.org (FA01, line)

Integrating CS with other courses taught in the program, and other disciplines (engineering, science, literacy)

Implementing existing curriculum and resources, or creating new resources

Interview Results: Authentic Experiences

How much experience they get in the field is I image the cooperating teacher dependent. (FA01, line 132-133)

When they go out to the field … and work with .. 2nd graders … once they start seeing how smart those kids are, our kids get excited. (FA04, 206 – 209)

We want our students to understand that we are trying to solve real-world problems. (FA04, line 76-78)

Partnering with elementary schools	Providing more real-world experiences to pre-service teachers	Providing authentic problem solving opportunities

Interview Results: Challenges

I don't have a full grasp of what it looks like. I would like to see concreate examples of how other faculty members around the state are doing that. (FA01, line 251-253)

Leadership, … As a leader need to coordinate with other faculty members. (FA03, line 50-59)

Hard enough time documenting the candidates use of technology in the field, so, the answer is "No'. (FA02, line 61-62)

Pedagogical content knowledge	Leadership support	Authentic settings to apply knowledge

Discussion

1. Do you have other challenges that didn't fit into the themes?
2. What are some ways to address these challenges?

bit.ly/NADiscuss2024

Padlet link will be open, and you can put things there throughout today's summit.

IDOE Updates

State of the State

IDOE Update Slides

Curriculum Resources

BCPCS Resource Library

Professional Learning for Preservice Educators
Overview

- IUB and Nextech offer Indiana educator preparation programs (EPPs) the opportunity for CS PDs at their location for preservice teachers and local educators.

- Because of our generous partners at the IDOE, PDs will be offered at no cost, and will potentially include stipends for PD organizers and attendees.

- Including two options:
  - Option 1: In-Class Visit(s) to your Program
  - Option 2: Professional Learning Workshops

Professional Learning for Preservice Educators

Option 1: In-Class Program Visit(s)

- In-person or Virtual
- One or more visits
- Content to be mutually determined
- Incentive for organizing teacher educator

Professional Learning for Preservice Educators

Option 2: Professional Learning Workshops

- In-person or virtual
- Half-day or full-day
- Content to be mutually determined
- Incentives for attendees ($100) outside of class time and for organizing teacher educator

PD Options - IUB

Project Names	CS Concepts	Grade levels	K-6 Curriculum Materials	PD Materials
Rethinking Circle Time (ReCT)	Computational Thinking + literacy	K-2	• Resources	• Slides
Primary AI	AI + Science	4th – 6th	• Resources	• Slides
CS for Social Good	CS, Coding	6th – middle school	• Resources	• Slides
AI Goes Rural	AI	6th – middle school	• Resources	• Slides
Introduction to CS	CS, AI	Preservice teachers	• Not applicable	• Slides
Data Science in Education	Big Data, AI, Data literacy	Preservice teachers	• Not applicable	• Will be updated

PD Options - Nextech

Course Names	CS Concepts	Grade levels
Code.org CS Fundamentals	Coding, computational thinking, digital citizenship	K-5
Unpacking the Updated Indiana CS Standards	Indiana CS Standards	K-8
Integrating CS in your 6-8 Classroom	CS Standards and practices	6-8
Integrating CS in your K-8 Classroom Using Digital Citizenship	CS and Digital citizenship	K-8
Integrating CS in your K-8 Classroom Using Artificial Intelligence	CS and AI	K-8

*Nextech PDs must be half or one day workshop (3-6 hours).

PD Updates

CS PDs Impacted

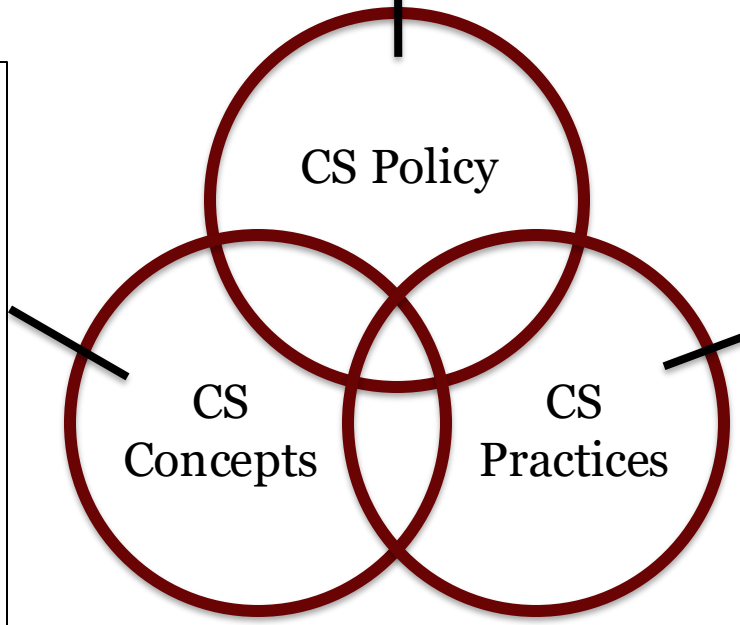
- 6 universities (including IUB)
- 13 visits (both in-class & longer workshops)
- Over 350 preservice teachers participated
- 9 Faculty members collaborated

How to arrange a PD

1. Contact Dr. Susan Drumm (sdrumm@indiana.edu)
2. Set up a meeting with BCPCS team
3. Describe your preservice teachers and needs
4. We will base on your needs to design PD content

PD Content

- CS Standards
- CS in Indiana



- What is CS
- Why CS
- Coding
- Computational thinking (CT)
- Artificial Intelligence (AI)
- Data Science
- Data literacy

Examples from projects:

- Unplugged activities
- CS Vision
- Scratch
- Code.org
- Teachable machine
- CT robots
- Data visualization tools

Moving Forward

1. Website for resources
    - BCPCS - Center for Research on Learning and Technology
    - Under construction: CS for IN (CSforIN.iu.edu)
2. Spring availability for PDs
    - Limited offerings from IUB
    - Nextech for more availability

Equipping Preservice Teacher Educators

CS Cohort

Let Us Know

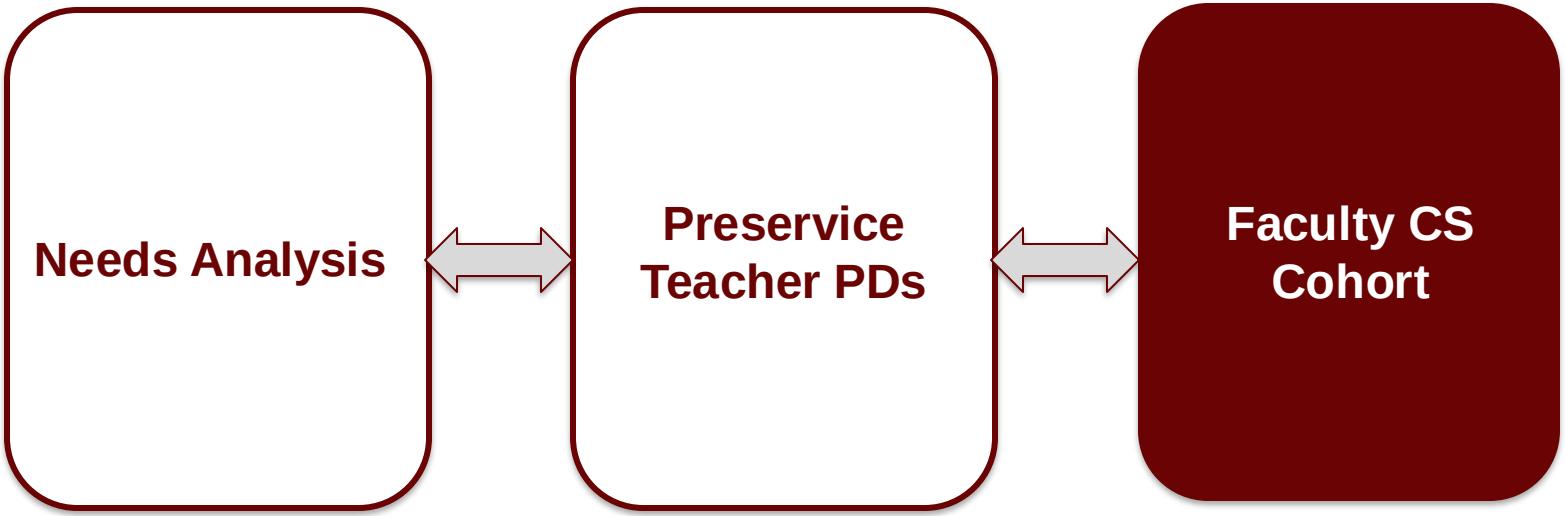
If you were given a chance to participate in a longer (e.g. a week or months long) Faculty CS PD, what would you like it to be like?

Grab a sticky note from your table and place it on the board. You can talk to other if you like to.

CS Cohort

As one of the pillars of the Building Capacity for Indiana Preservice Teacher CS Education project, **CS Cohort is geared toward faculty members** who are currently teaching **elementary preservice teachers.**

CS Cohort: Building Capacity



Goals

Support elementary teacher educators'

- Connect and share expertise
- Enhance CS knowledge
- Boost professional development opportunities
- Broaden CS teaching competencies

Opportunities

For

- Collaboration
- Creating elementary ed. faculty CS professional community
- Building Preservice Teacher CS Curriculum Resources
- Professional Development

More Opportunities

Upon completion of CS Cohort Spring 2024 (March – June)

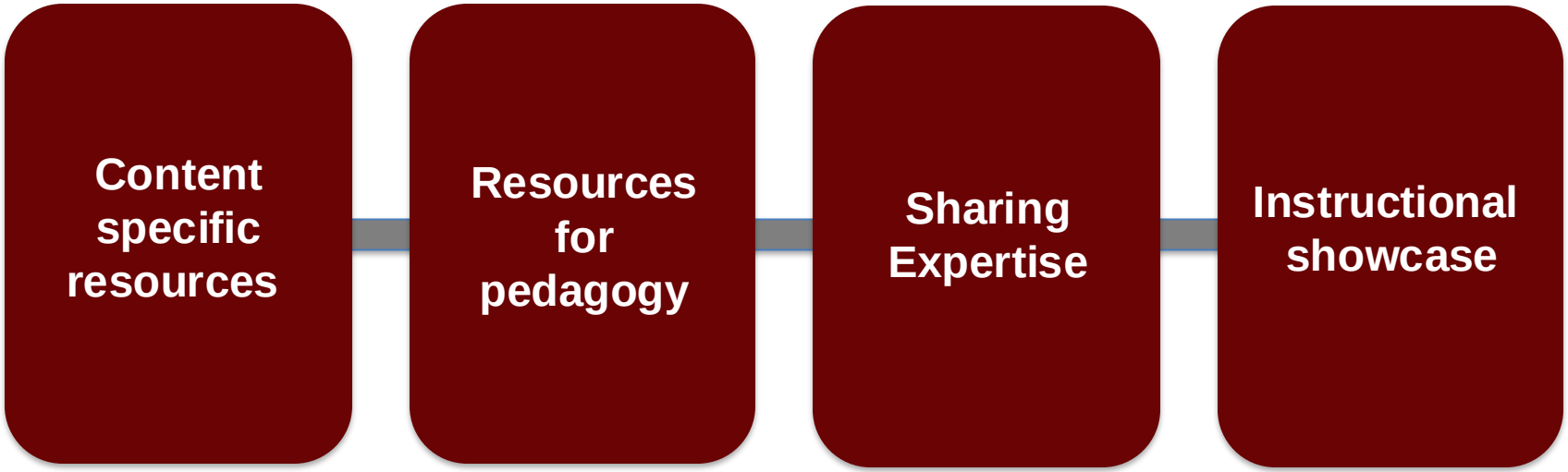
Your time commitment and participation will be compensated with a stipend in the amount of $2,500

Even More Opportunities

Participation during the CSPD week

- What: CSPD + CS Cohort sessions
- Where: IU Bloomington
- When: June 10 – 14, 2024
- How much?: Free (all expenses covered)

What's in CS Cohort?



Expectations & Commitment

- Start date: March 18th, 2024
- End date: June 14th, 2024
- Participating:
  - Discussions, meetings
- Creating: your lessons, resources

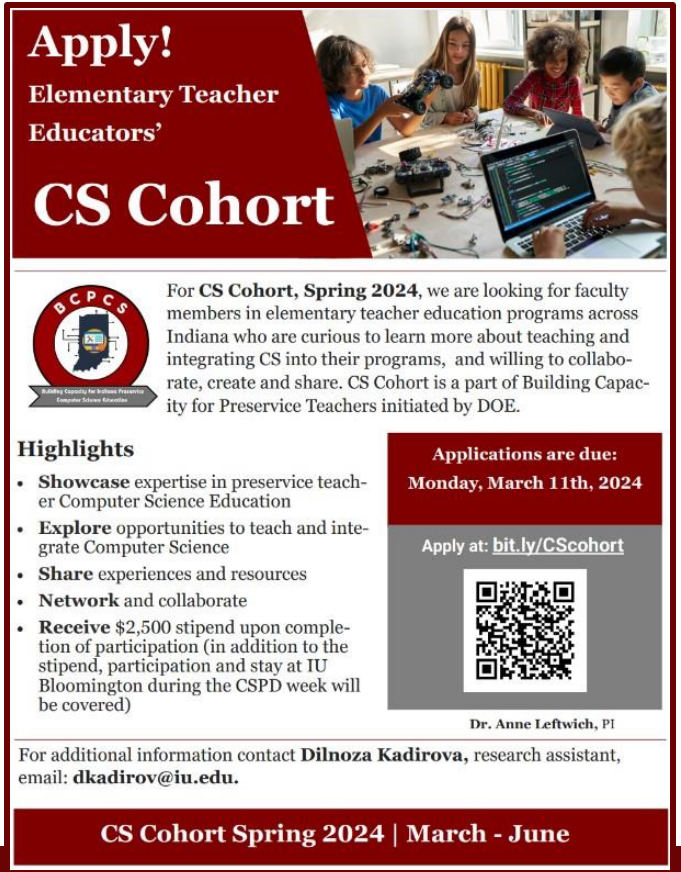
Planning Information

To help you gauge the time commitment that will be required by the CS Cohort, here is a chart of planned activities with dates/times to be determined by participants.

March • Applications due, **March 11th** • One-on-one meeting with researchers (date: TBD) • Distribution of the resources • Whole cohort meeting (date: TBD)	**May** • Work on planning a lesson and creating resources • One-on-one meeting with researchers (date: TBD) • Asynchronous discussions • Small group discussions (date: TBD)
April • Familiarization with the resources • Asynchronous discussions • Small group discussions (date: TBD) • Whole cohort meeting (date: TBD)	**June** Attending CSPD week at IU **June 10th - 14th** • Attending in-person PDs • Whole cohort meeting • Presenting lesson and resources

How To Apply?

- Application link: bit.ly/CScohort
- Check your emails
- Share with your colleagues
- Reach out with your questions



Any Questions?

Thank you!

INDIANA UNIVERSITY BLOOMINGTON