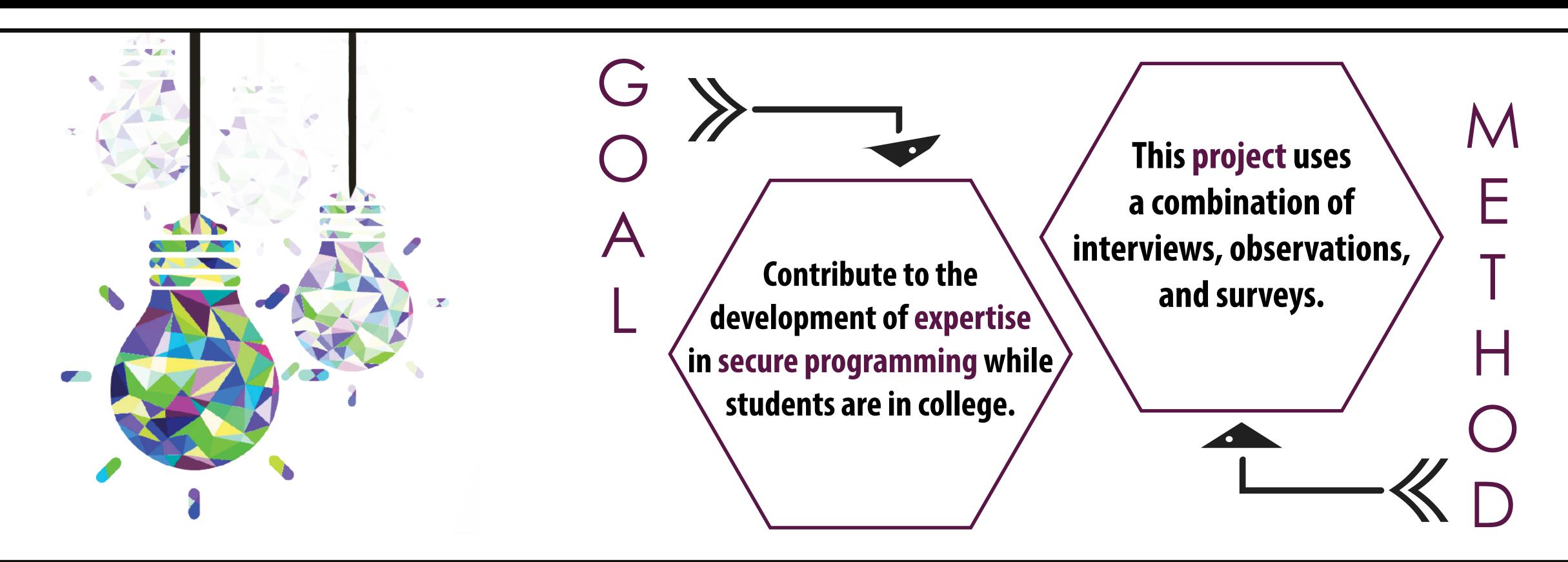
The Center for Education and Research in Information Assurance and Security

# Secure Programming Clinic

### Problem:

Current state of security software is poor due to lack of expertise in secure programming.





# This project will investigate:

- **★** How a diversity of experiences and contexts to help the learners abstract their developing knowledge across contexts
- ★ The efficacy of concept maps to help students understand the connections amongst concepts, and to measure the development of their emerging mental models
- **★** The relationship between the number of learning experiences needed and the development of expertise
- ★ How whole-part strategies to help learners practice and master fluent integration of complex knowledge and skills as developing experts
- **★** Methods for connecting students to each other and to a range of subject matter experts (SMEs) in the field of secure programming into a community of practice affects the development of expertise



## SPC Structure:

Role: Primarily teaching Source: Experts from academia, government, and industry Remuneration: None - volunteer position
Responsibilities: Mentoring, answer programming, and design questions,

teach mini-workshops, discuss career opportunities, dissemination of clinic

Proficient Clinician

Role: Teaching and learning Source: Senior undergraduate students, graduate students Remuneration: Volunteers, credit, paid Responsibilities: Mentoring, answering programming and design questions, teach mini-workshops, grading

Role: Primarily learning Source: Students at the university Remuneration: None
Responsibilities: Submit programs for review and critique

Role: Evaluation Source: Instructors at the university Remuneration: None Responsibilities: Assign grades to student assignments

Role: Management and evaluation Source: Experts from industry, academia Remuneration: None, consulting fee Responsibilities: Planning and management of clinic activities, recruit clinicians,

evaluation of clinic performance, dissemination

### Team:



Dr. Melissa Dark - Purdue, Dr. Matt Bishop - UC Davis, Dr. Ida Ngambeki - Purdue, Dr. Jun Dai - Cal State Sacramento, Dr. Phil Nico - Cal Poly San Luis Opisbo, Steve Belcher - National Security Agency, Lauren Stuart - Purdue Acknowledgements:

Somdutta Bose, MingHua Zhu, NSF Award ID: DGE-1303048

#### **Associated Publications:**

Ngambeki, I., Dark, M., Bishop, M. & Belcher, S. (2015). Teach the Hands, Train the Mind. A Secure Programming Clinic. Proceeding of the 19th Colloquium for Information System Security Education, Las Vegas, NV.

Dark, M., Belcher, S., Ngambeki, I. and Bishop, M. (2015). Practice, Practice, Practice Programmer. *Proceeding of the 19th Colloquium for Information System Security Education,* Las Vegas, NV.







