

## Overview

### Poster Title:

Cybersecurity capstone project design:  
A simulation approach

**Author:** Ping Wang

**Institution:** Robert Morris University (RMU)

## Research Background

### DoL (2014) Tiers of KSAs & Competencies

1. Personal Effectiveness Competencies
2. Academic Competencies
3. Workplace Competencies
4. Industry-wide Technical Competencies
5. Industry-sector Functional Areas

### NCAE-CD Guide for Master's Programs

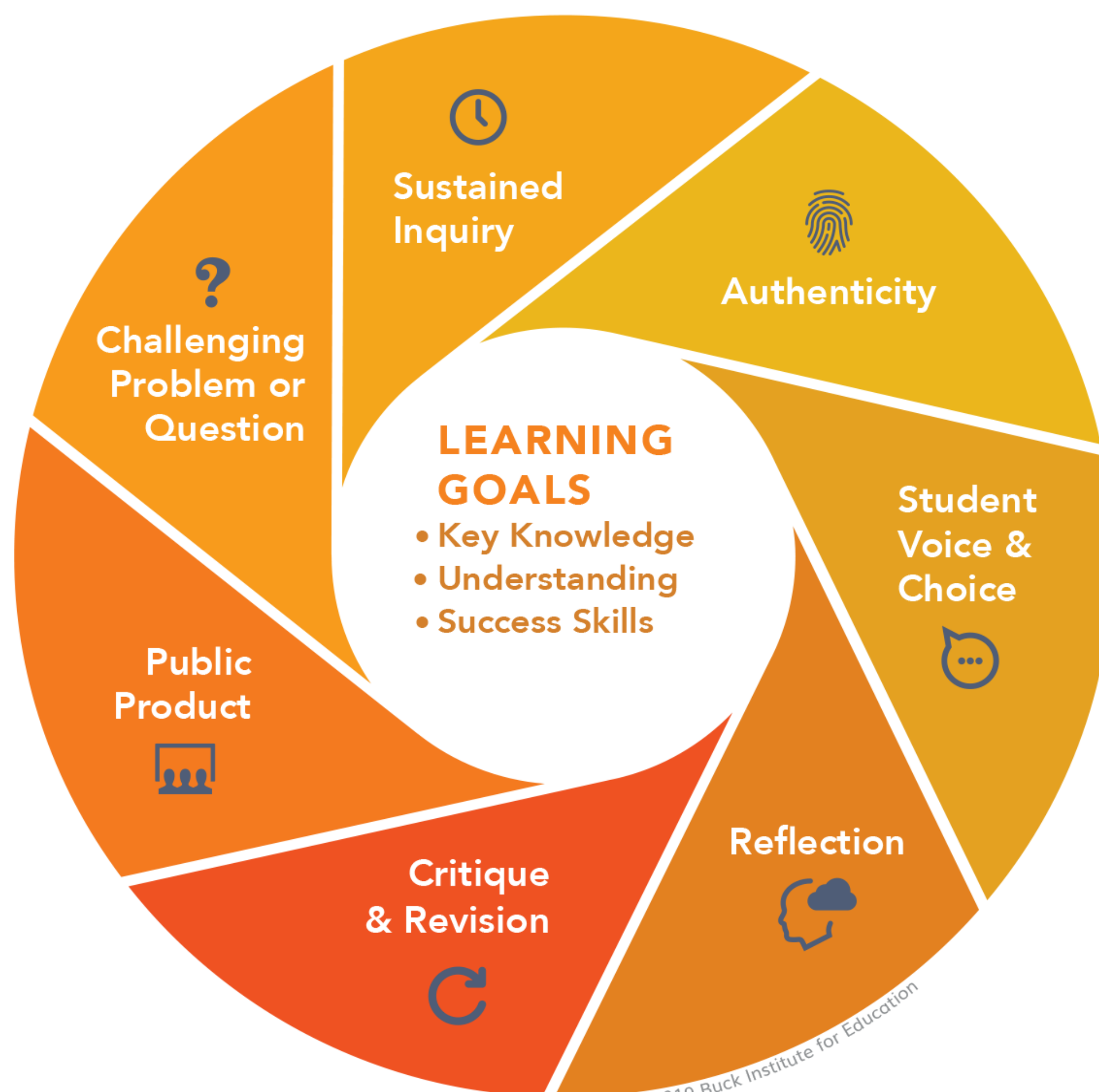
- Project/Capstone at end of PoS
- Supervised by qualified faculty
- Product integrates best cyber practices
- Clear concepts, standards, focus, metrics

### PBL (Project-based Learning) Model

- ✓ Enhance interest/motivation in learning
- ✓ Improve knowledge and hands-on skills
- ✓ Improve creative and innovative work
- ✓ Enhance critical thinking, problem solving, communication, teamwork, inquiry and personal reflections

## PBL Model

(Buck Institute for Education, 2019)



## Methodology

### PBL Case Design

- ✓ Simulation with empirical observations
- ✓ Sanitized enterprise case scenarios
- ✓ Realistic cybersecurity risks and challenges
- ✓ Comprehensive learning activities with integration of technical/non-technical skills
  - Technical (integration with SEED Labs)
  - Non-technical (OCTAVE evaluation)
- ✓ Graduate level research and reflections
- ✓ Incremental project milestones for progressive learning and assessment

## SEED Labs (Du, 2022)

(<https://seedsecuritylabs.org>)



## Project Milestones

- ❖ **Project Plan**  
Initial planning for instructor feedback
- ❖ **Progress Report**  
Identify and evaluate critical assets, vulnerabilities, risks, and lab test method
- ❖ **Project Presentation**  
Share findings for feedback
- ❖ **Final Report**  
Complete report of case and data analysis

## Preliminary Findings

	Participants (N)	Project Plan	Progress Report	Final Report
Fall 2023	10	100%	100%	100%
Spring 2024	10	100%	100%	100%
Spring 2025	12	91.67%	100%	100%

### ❖ Definitions & Observations

- Success rate is  $\geq 80\%$
- Consistent success rate in deliverables
- More data collection from future implementations