Promoting Inclusive Strategies in Online CTE & STEM Courses: Practitioner-Focused Research Methods

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Land Acknowledgement

Meet Minneapolis
City by Nature

What We'll Discuss Today

- Practitioner involvement in research and interventions
- Theoretical frameworks that shaped practitioner engagement in developing strategies to support online learners
- Insights on how practitioner-based research promotes equity-conscious studies

Two studies with related research goals…

- Conducted applied research to **problems of practice** in higher education
- Aimed to improve student inclusion and success in **online learning**
- Embraced **methods of co-creation** between researchers and practitioners

(NCER, 2022; IES, 2022)

…that both included practitioner collaboration and prioritized equity…

- Bring critical lens and diverse perspectives
- Attend to the influence of context
- Explore literature that addresses (systemic) mechanisms of racial (in)equity and interventions to address it in online postsecondary courses
- Focus on transforming inequitable systems

…but had distinct goals and approaches to the research.

Career and Technical Education CoLab (CTE CoLab)

- Exploratory
- Building community of practice
- Focus on PD and TA
- Practitioners defined interventions

Postsecondary Teaching with Technology Collaborative (Postsec Collab)

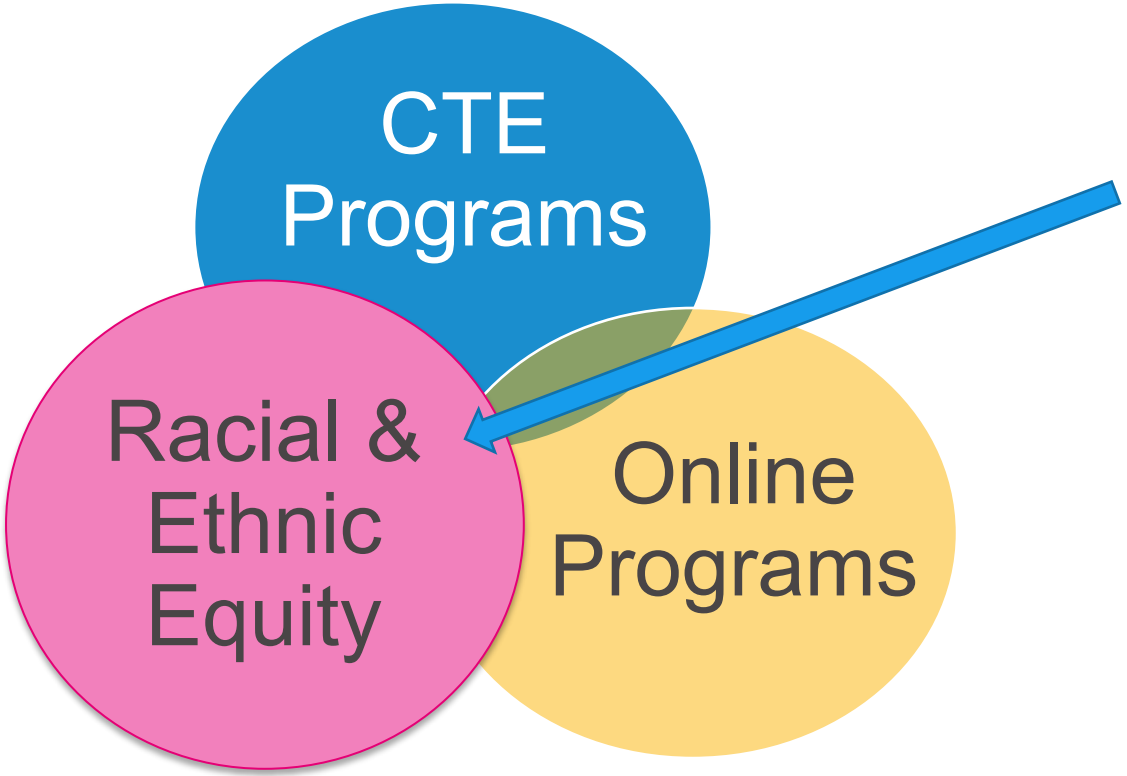
- Structured research
- Incorporating faculty in co-design and students as research fellows
- Tested classroom tools

CTE CoLab

The Career and Technical Education CoLab (CTE CoLab) aims to reduce disparities in academic and career outcomes for students of color—especially students who are Black, Latinx, or Indigenous—enrolled in credit-bearing online postsecondary CTE programs.

ctecolab.org:

Purpose: Further Practitioner-led learning



CTE CoLab Goals

- Support the development and implementation of equity action plans aimed at effecting changes in CTE programs
- Build and share knowledge about strategies to address identified equity gaps
- Improve education & employment outcomes for students of color in online CTE programs

Timeline

Phase 1: Fall 2020-Spring 2023 – Focus of today's presentation

Phase 2: Fall 2023-Spring 2025 – Ongoing

CTE CoLab Partners

Funded by ECMC Foundation

CTE CoLab College Community of Practice

Colleges: field of study + geographic area

- Business and Public Sector: 3
- IT or Digital Focus: 4
- Early Childhood: 2
- Mechanical Technology: 3

CTE CoLab Framework

Prior factors **Outcomes**

Practice change at 3 levels:

Online Class

Program

Institution

Foundational landscape scan:

Gaps in Evidence about Equity in CTE

Informed by findings from the foundational landscape scan, set out to build knowledge in 3 areas:

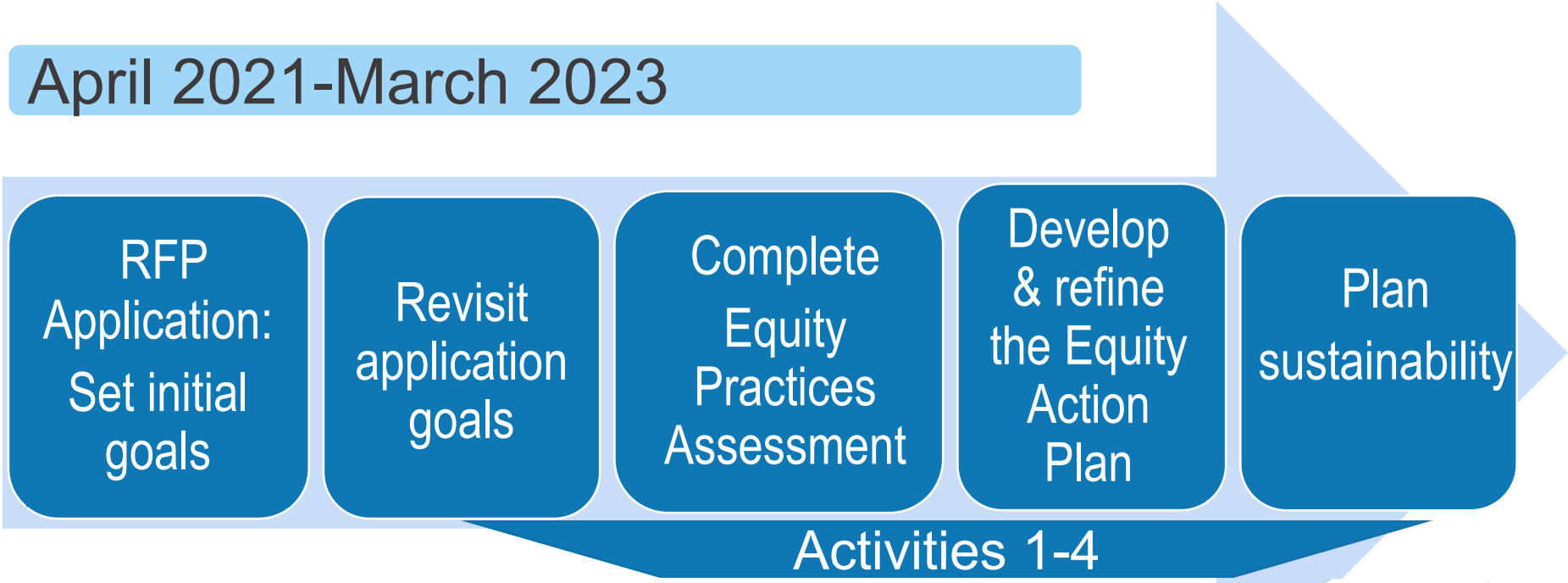
1. Identify Effective Strategies to Expand Equity*
2. Improve Data and Tracking*
3. Examine Accreditation, Licensing, and Funding Policies

*Key areas of focus in CTE CoLab Phase 1

Identify Effective Strategies to Expand Equity

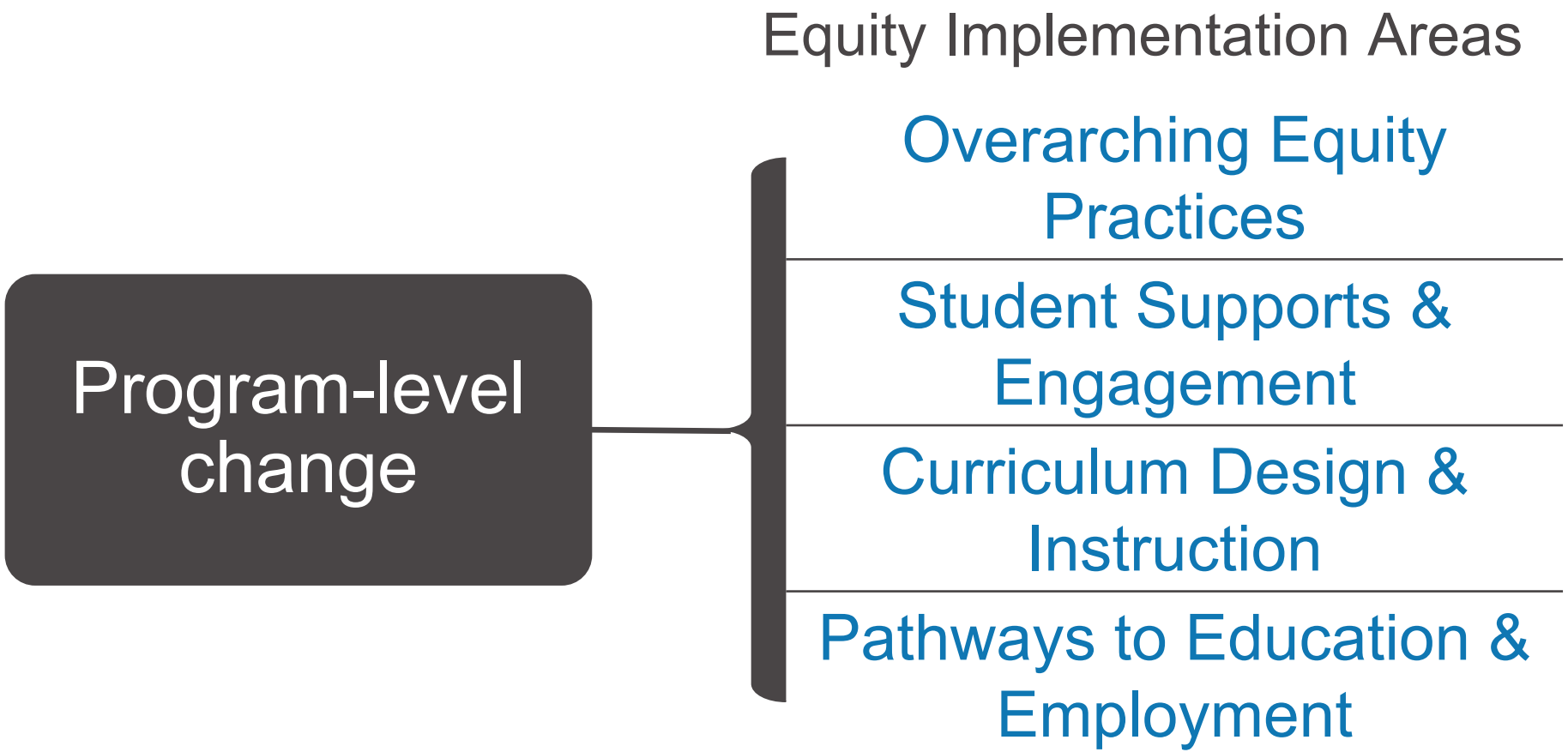
Equity Action Planning (EAP) Process

April 2021-March 2023



College equity action plan summaries:

Areas of Focus and Innovation for CTE CoLab Colleges



Spotlight: Curriculum Design and Instruction

Strategies adopted by colleges

- Engage faculty with resources and support for professional development
- Modify curricula to be culturally responsive and adapt syllabi to be equity conscious
- Foster student and instructor digital skill attainment

Lessons Learned

- Provide PD that advances instructors' understanding of equity, student needs, and strategies to advance equity
- Adapt curricula, materials and instruction to increase students' sense of belonging
- Support instructors by offering PD and resources to deliver effective online instruction

Findings

- Colleges built their knowledge of equity concepts and strategies, identified gaps, established and made progress toward goals
- Bigger institutional changes can require starting small
- Diverse expertise and perspectives to advance equity are needed
- Challenges: two-year timeframe of the initiative, capacity constraints on staff and administrators and need for further peer to peer learning

Practice report describing detailed findings:

Improving Data and Tracking

CTE CoLab Research Activities & Methods

- Racial equity is both an outcome and a process; collecting & disaggregating data is a necessary but only initial first step
- Incorporated staff, faculty, student and admin characteristics and perspectives via both quantitative and qualitative data

CTE CoLab Led

- Foundational landscape scan
- Student administrative data
- Instructor surveys
- Case studies

College Team Led

- Student surveys
- Student focus groups
- Creation of data books
- Deeper exploration of student data

Use of Data Created Feedback Loop for Practitioners

- Examined quantitative and qualitative data to inform action
- Established communication strategies to feed back information to college teams
  - Fact sheets summarizing student administrative data
  - Instructor survey webinar and results brief
  - Professional development and technical assistance workshops, including data benchmarking session
- Colleges benefited from insights collected via practitioner-led focus groups and surveys of students

Findings

- Student data can measure disparities in outcomes for students in programs
- Won’t tell you why they are happening but a great starting point for further investigation
- Can be an excellent metric to check-in on over time– are those gaps closing, and are changes working?

Findings continued

- Challenges: sustainability of data tracking and analysis with limited capacity, need for ongoing data collection and review, need for narrative to tell a compelling story with the data, how to involve students in meaningful ways
- Data informed programmatic changes and deeper understanding of equity considerations in the online environment

Data Insights to Improve Racial Equity Report:

CTE CoLab Resources

Toolbox containing research products, practitioner-led resources developed by the colleges, videos, and event recordings is available at:
ctecolab.org/#toolbox

Project email: cteccp@urban.org

Clarifying questions?

The Postsecondary Teaching with Technology Collaborative

A research and capacity-building center that aims to study and improve how faculty **teach** and use **technology** to help students apply and strengthen **self-directed learning skills** to increase their success in online STEM courses.

What does the Postsec Collab hope to achieve?

- ☑ Increase awareness of the importance of self-directed learning skills and of culture and context in supporting these skills
- ☑ Advance educational equity by building colleges' and universities' capacity to improve instructional quality in ways that support their diverse student bodies in STEM
- ☑ Involve STEM instructors in efforts to create inclusive online course environments and help racially diverse students develop skills and mindsets to manage their learning
- ☑ Improve online instruction and/or use of technology for instructional purposes
- ☑ Strengthen feedback loops among researchers, practitioners, and education technology developers

Postsecondary Teaching with Technology Collaborative

The Postsecondary Teaching with Technology Collaborative

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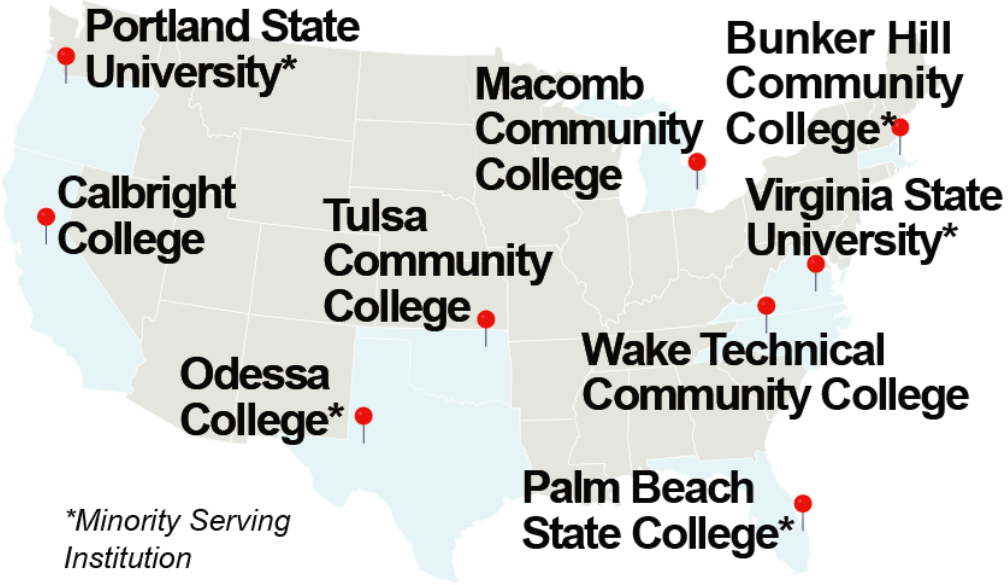
Achieving the Dream



Postsec Collab Research Activities

- Qualitative research to shed light on **institutional policies and practices (IPP)** and instructional environments

2021-2022

- **Rapid cycle experiments (RCEs)** to test and refine technology-enabled instructional strategies

2022-2023

- Develop and pilot-test **an integrated instructional model** that uses tech features to deliver SDL instruction

2023-2025

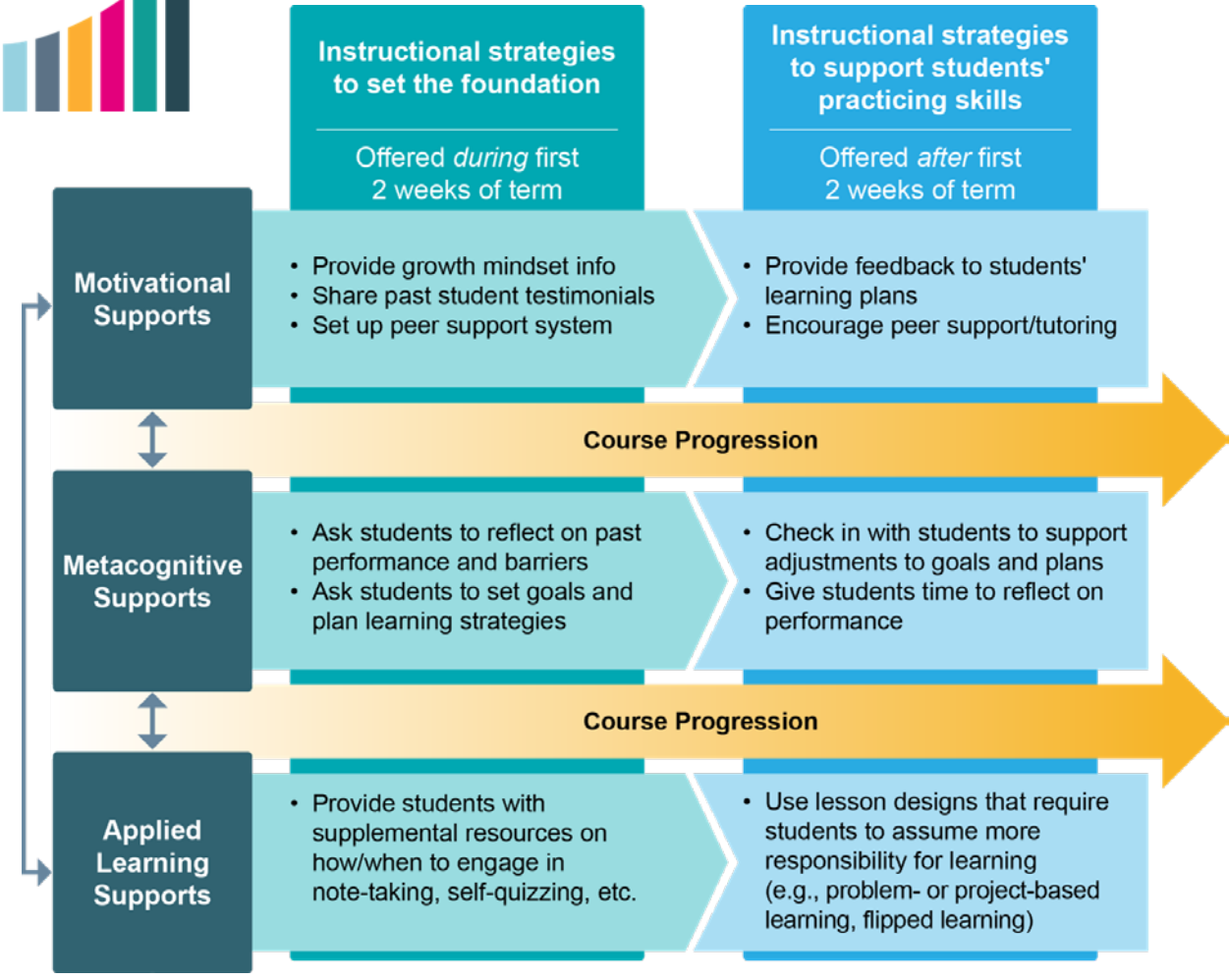
Postsecondary Teaching with Technology Collaborative

SDL Framework

- Drew on insights from team's past experiences in higher ed
- Worked with IPP team to understand current problems of practice related to students' SDL skills
- Synthesized research conducted in higher education classrooms

SDL Framework

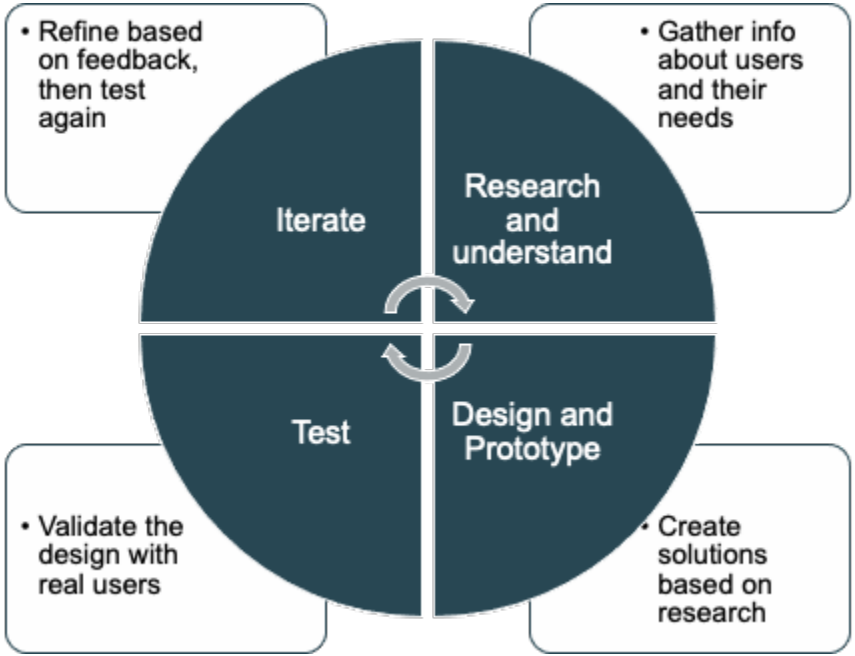
- Focused on practical communication
- Situated in the rhythms of instructors' work



Action Planning: User Centered Design

- **Refine RCE tools**
- **Retest**

Postsec Collab Progress



- **IPP Study interviews**

- **RCE lit review and report**
- **Initial RCE design concepts**

- **Co-design RCE tools**
- **Ongoing interviews**
- **Tracking tool usage**

Engaging Practitioners to Increase Equity

Limited prior research on SDL in broad access institutions

- **Partner with broad access institutions**
- **Include student voice in research and capacity**
- **Engage with equity-based researchers**
- **Developing parallel "equity framework" to inform PD**
- **Liberatory design to develop instructional model and PD**

Sample technology-supported strategies to develop SDL needs

Some students believe initial failure means they don't belong in a class	→	Assign video explaining science of learning and growth mindset
Some students need real time adjustments to improve performance	→	Set up automated prompts focused on goal setting, task planning, etc.
Students do not feel safe admitting they do not understand	→	Use technology to support peer communication and help seeking

Institutional Policies & Practices Study Design

- Interviews with faculty, administrators, and students at member campuses
- Surveys testing two different SDL self-report instruments with students at member campuses

High-level Take-aways: IPP Study

Interviews

- SDL skills taught **outside of classroom** in college readiness courses
- **Infrequent classroom** support for SDL skills

Surveys

- Students' sense of **self-efficacy predicts course grades**
- **Few students report seeking help**, particularly from their peers

Rapid Cycle Evaluation Study Design

Quantitative

- **Design:** Treatment-comparison
- **Unit of analysis:** Course level; instructors serve as controls
- **Course grades:** Estimate impacts on course grades of online instructor using 1 or more SDL tools
- **SDL skill change:** Measuring pre-post change using self-report surveys
- **Tool and learning activity:** Use LMS data to model trends in SDL tool engagement & course activities, disaggregating by student characteristics

Qualitative

- Gathering interview data from instructors and students using SDL tools on satisfaction, how tools were used, and perceived usefulness

Initial Impressions: RCE Study

Quantitative

- **Coming soon!**

Qualitative

- **Videos:** Students engaged well, outlined strategies; Instructors found easy & helpful to use
- **Prompts:** Students generally responded, found them useful; Instructors found easy and useful

Thank You

Postsecondary Teaching with Technology Collaborative

Subscribe to our newsletter: https://tinyurl.com/Postsecnewsletter

Visit us at https://postseccollab.org/

Clarifying questions?

Follow Up: Panel Discussion

1. How did you develop your theoretical frameworks? How did you think about practitioners during the process of developing the framework?

2. What have you learned from your collaboration with practitioners?

Insights into How to Conduct Practitioner - Focused Research

- **Draw on logic models and frameworks** that serve both researchers and practitioners
- Find flexible **communication strategies** around emergent research findings
- **Use participatory methods** for developing and testing educational innovations
- Center equity – designing opportunities to **value all end users' needs and perspectives**, including those with limited voice and power

- How could a practitioner-focused study contribute to your own research projects?
- Have you used a participatory method for developing and testing educational innovations?
- How do you think practitioner-focused research can contribute to equity?

Peer Discussion

Thank you!

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