

Supporting Success in Online Courses: Early Insights from the Postsecondary Collaborative

Friday, April 28, 2023

SRI Education

Community College Research Center

Agenda



- A framework for student success in online courses
- Qualitative and survey findings from students and faculty
- Instructional components of Rapid Cycle Experiments
- Q&A



Presenters



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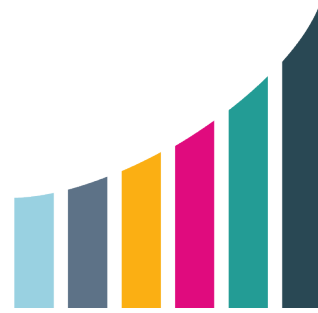
Jared Boyce
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What is the Collaborative?

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 courses.



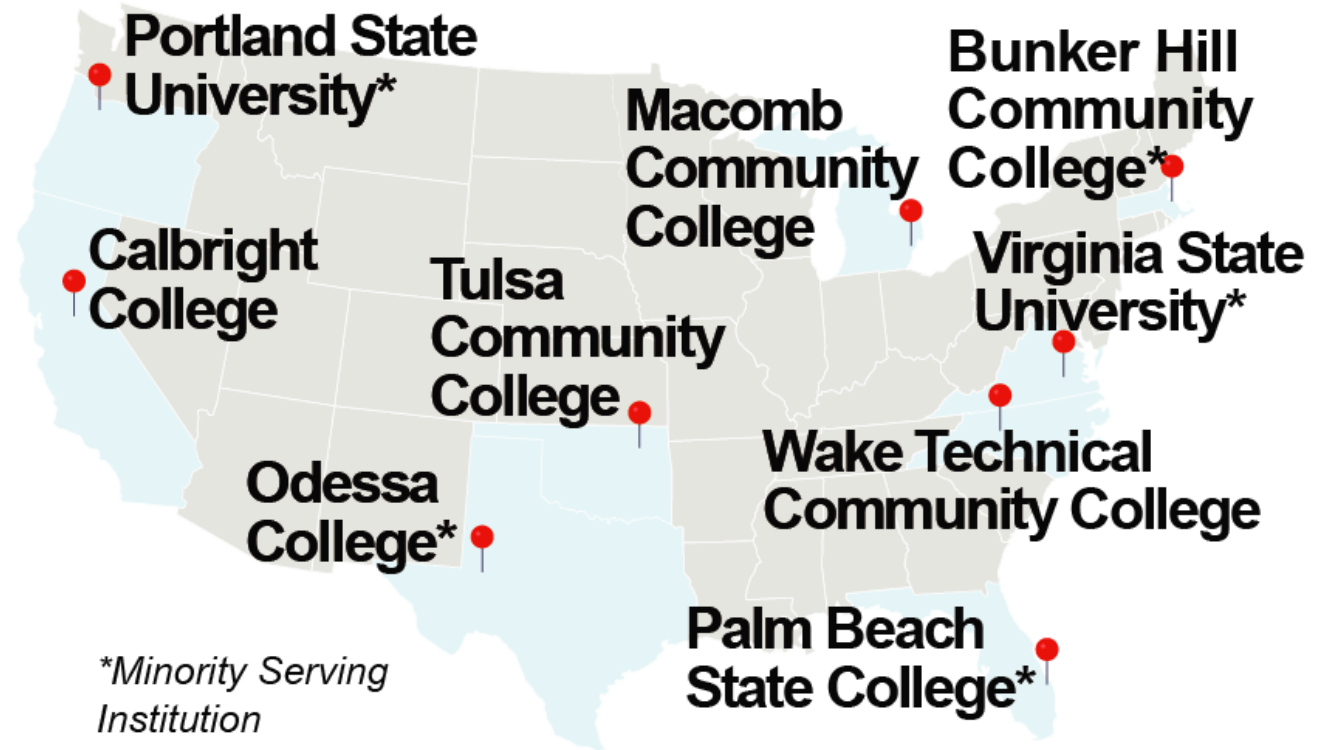
Postsec Collab: Who we are



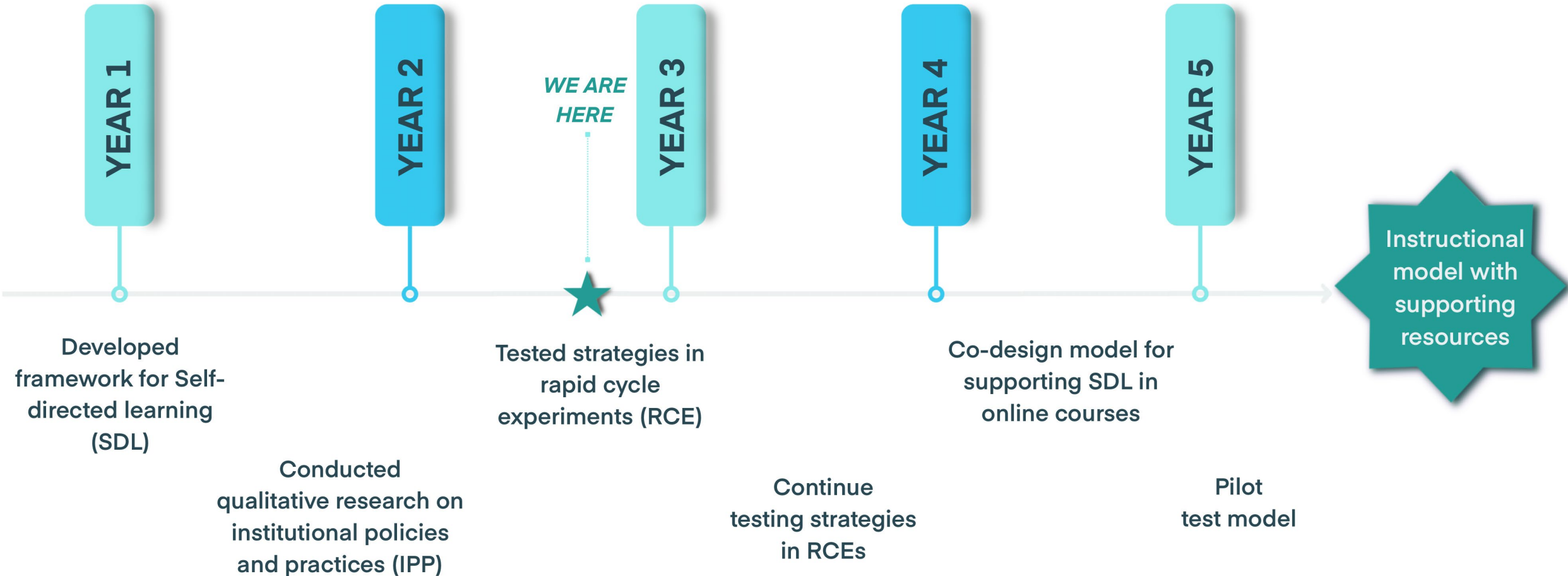
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the Dream**



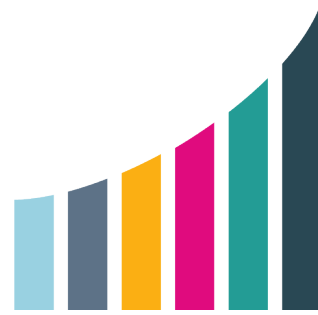
WHAT WE'VE ACCOMPLISHED AND WHERE WE ARE GOING



Self-Directed Learning Skills: Framework & Rationale



Why focus on online SDL skill development?



COVID has increased the urgency for research and support to improve teaching and learning in online courses

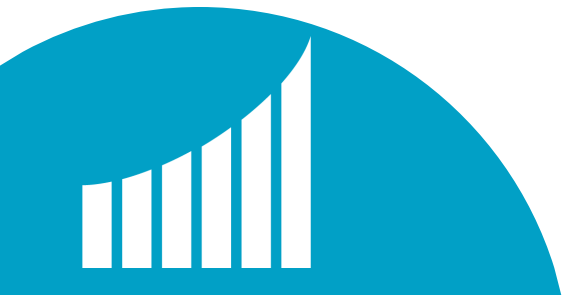
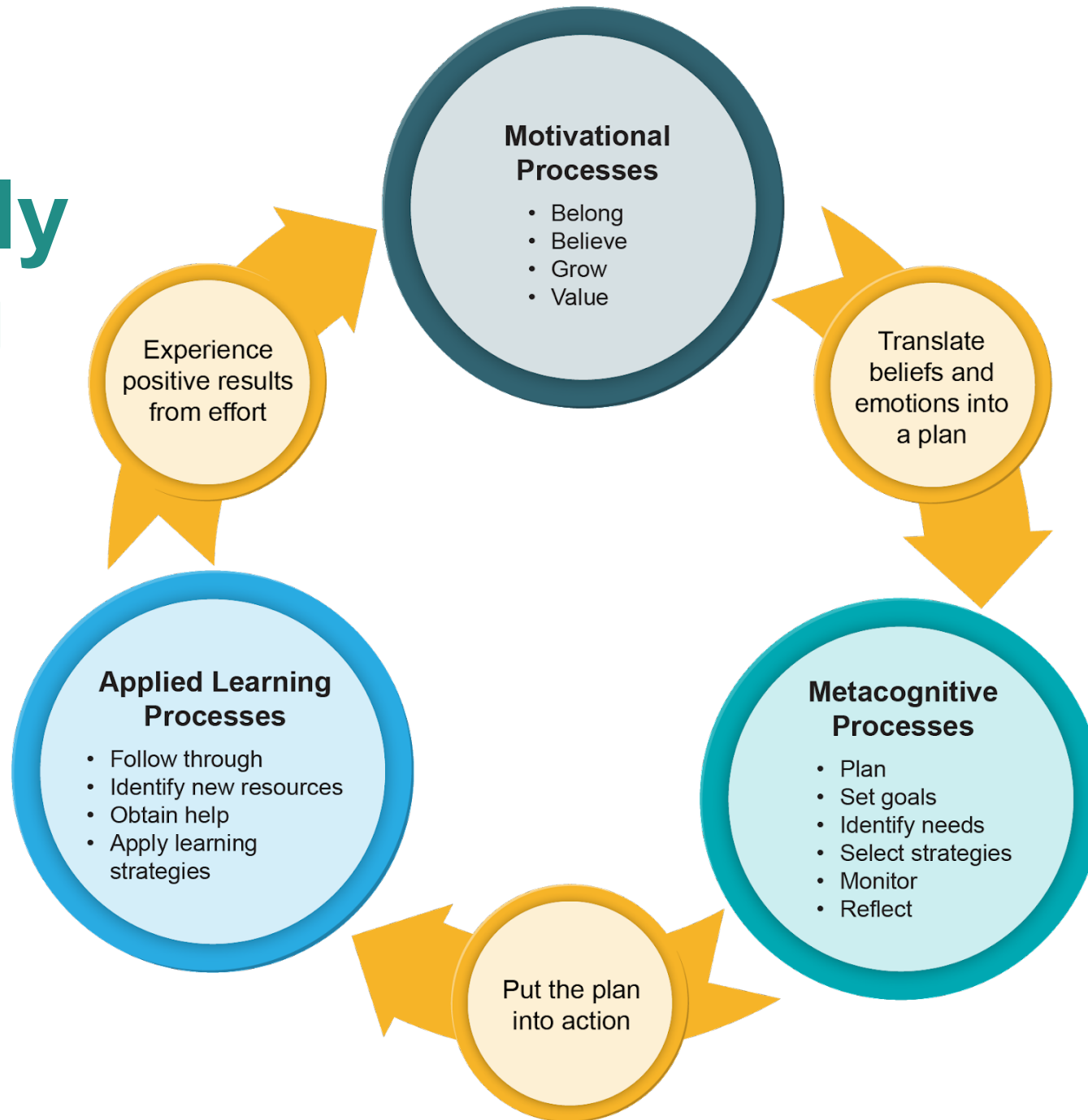


Higher education needs more information about strategies to improve equitable outcomes in online courses



The need for strong self-directed learning skills may be more profound in online courses, especially in STEM

SDL skills are mutually reinforcing

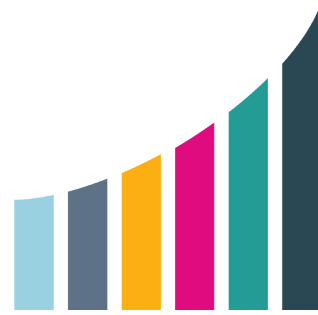


What does the research say?

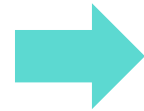


- Faculty can use relatively low-burden interventions to support students in developing and employing self-directed learning (SDL) skills.
- As a result, their students use SDL skills more frequently and have higher academic success.
- While current evidence is promising, there are several gaps in current SDL research focuses on:
 - Fully online courses
 - Broad-access institutions that serve more diverse student populations
 - Implementing SDL-supportive activities at scale

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.



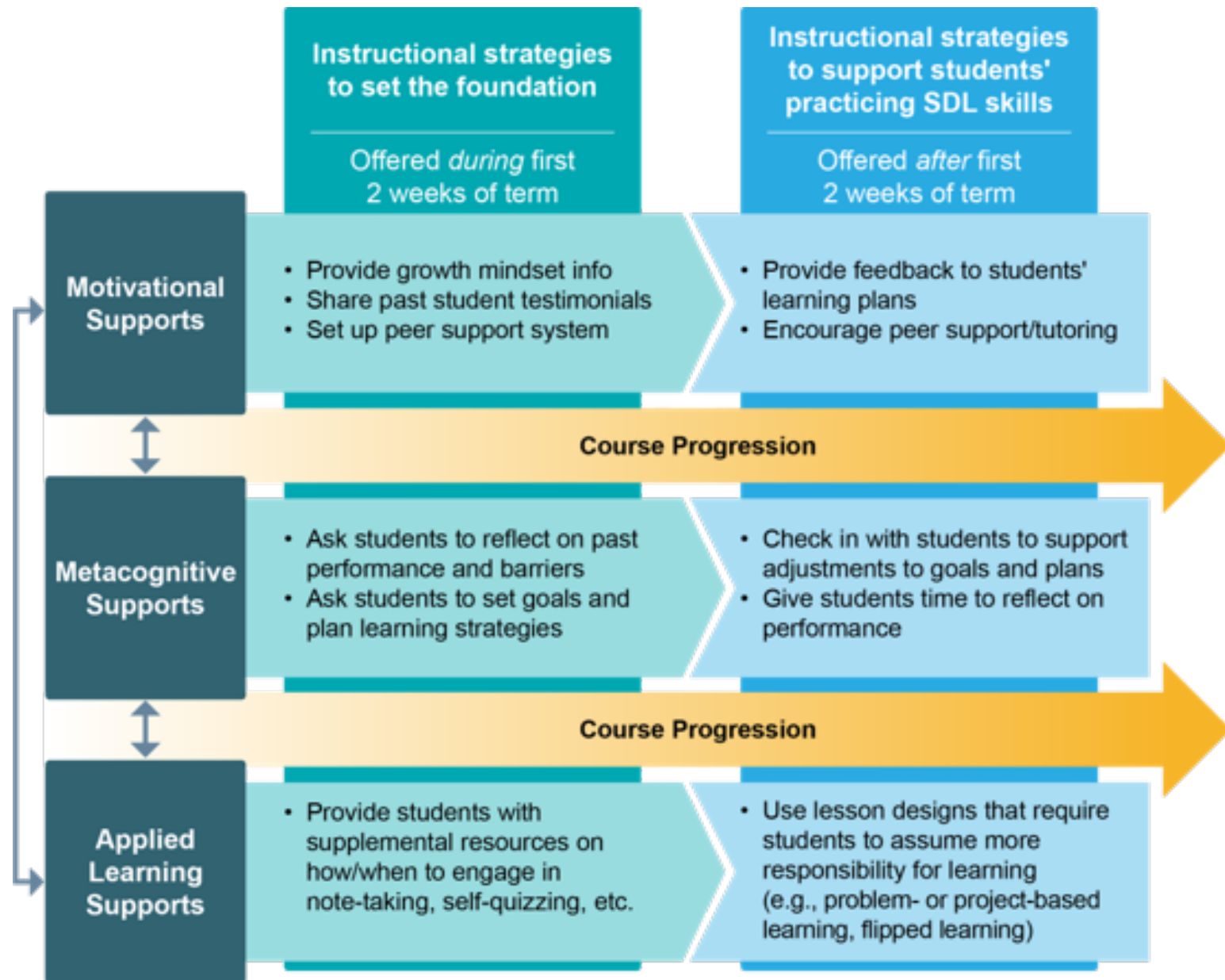
Students do not feel safe admitting they do not understand



Use technology to support peer communication and help seeking



SDL Instructional Support Framework



Findings from Research with Students and Faculty



Data Sources



Interviews and Focus Groups

- 63 faculty
- 20 students enrolled in online/hybrid STEM courses
- 106 college administrators and staff

Surveys of Students and Faculty

- 141 faculty who teach math and biology at 8 institutions
- 246 students enrolled in online/hybrid math and chemistry at 2 institutions

Student survey goals and structure



Construct	Scale	Source
Self-Efficacy	PERTS: Subscale: Self-Efficacy	Hanson, 2017
	Online Learning Self-Efficacy Scale (OLSES). Subscale: Learning	Zimmerman & Kulikowich, 2016)
Time Management	Online Self-regulated Learning Questionnaire (OSLQ). Subscale: time management	Barnard et al., 2009
	UCI Measuring Undergraduate Success Trajectories project (UCI - MUST). Subscale: Self-Efficacy/Time management	Arum et al., 2021
Help Seeking	OSLQ: Subscale: Help Seeking	Barnard et al., 2009
	UCI-MUST: Subscale: Help Seeking	Arum et al., 2021
Sense of Belonging	Project for Educational Research That Scales (PERTS). Subscale: Sense of Belonging	Hanson, 2017
Metacognition	Metacognitive Awareness Inventory (MAI). Subscales: Debugging strategies, Cognitive monitoring, Evaluation.	Schraw & Dennison, 1994
Learning Environment	Distance Education Learning Environments Survey (DELES). Subscale: Instructor Support	Walker & Fraser, 2005

Sample characteristics (N = 246)

Personal Characteristics	% Of Sample	% Of Each Course			
		College A College Algebra	College A General Chemistry	College Alpha Precalculus	College Alpha Principles of Chemistry
Non-white	52%	63%	67%	35%	52%
Female	63%	63%	52%	73%	81%
Enrolled during 2022	59%	69%	65%	60%	62%
First Generation	48%	57%	30%	47%	60%
English is First Language	78%	65%	76%	73%	78%
At least one parent attained college or above	54%	51%	70%	57%	47%
Working for more than 30 hour/week	41%	42%	35%	27%	65%
Not a caregiver	64%	72%	70%	73%	33%

Response rate (Overall, 29%)



College A, N = 121

Section	College Algebra
1	62%
2	55%
3	52%
4	45%
5	43%
6	34%
7	23%
8	22%
9	10%
10	3%
	35%
	Average participation

N = 75

Section	General Chemistry
1	50%
2	12%
3	11%
4	4%
5	3%
	16%
	Average participation

N = 46

College Alpha, N = 125

Section	Precalculus
1	83%
2	80%
3	59%
4	57%
5	42%
6	38%
7	29%
8	25%
9	23%
10	14%
11	11%
12	11%
13	10%
14	7%
	35%
	Average participation

N = 100

Section	Principles of Chemistry
1	48%
2	31%
3	28%
4	23%
5	21%
6	20%
	29%
	Average participation

N = 25

Motivational Processes: Self-Efficacy



Motivational Processes: Self-Efficacy Overview

We tested two self-efficacy scales:

General

How much do you agree about the following statements about yourself?

I can do well on tests, even when they're difficult

I can master the hardest topics in my class

I can earn an A or top grade in this class

I can meet all the learning goals my teacher(s) set

In technology, in online environments

How well can you do the following actions?

Communicate effectively with technical support via e-mail, telephone, or live online chat

Overcome technical difficulties on my own

Learn to use a new type of technology efficiently

Learn without being in the same room as the instructor

Learn without being in the same room as other students

Communicate using asynchronous technologies (discussion boards, e-mail, etc.)

Complete a group project entirely online

Use synchronous technology to communicate with others (such as Skype)

Use the library's online resources efficiently

When a problem arises, promptly ask questions in the appropriate forum (e-mail, discussion board, etc.)

General Self-Efficacy

Most students indicated agreement with favorable descriptions of their general self-efficacy; however, the agreement varies prompts

How much do you agree with the following statements about yourself in this class?	Strongly Disagree or disagree	Neither Agree nor Disagree	Agree or strongly agree
I can do well on tests and/or assignments in this class (1)	10%	15%	75%
I can master the hardest topics in this class (2)	21%	28%	52%
I can earn an A or top grade in this class (3)	19%	25%	56%
I can meet all the learning goals my instructor sets (4)	9%	20%	71%

* Darker shades indicate higher scores

Self-Efficacy in Technology, Online Environment

The majority of students indicated agreement with favorable descriptions of their self-efficacy as related to technology

Q 5.2 How well can you do the following actions in {Course}, Section {SectionNumber} ?	Terribly or Poorly	Average	Good or excellent
Communicate effectively with technical support via e-mail, telephone, or live online chat (1)	4%	24%	71%
Overcome technical difficulties on my own (2)	4%	27%	69%
Learn to use a new type of technology efficiently (3)	2%	19%	79%
Learn without being in the same room as the instructor (4)	6%	16%	79%
Learn without being in the same room as other students (5)	3%	15%	82%
Communicate using asynchronous technologies (discussion boards, e-mail, etc.) (6)	3%	19%	78%
Complete a group project entirely online (7)	9%	26%	65%
Use synchronous technology to communicate with others (such as Skype, Discord, Snapchat, Zoom, Microsoft Teams, Blackboard Collaborate, Canvas) (8)	2%	15%	83%
Use the library's online resources efficiently (9)	9%	27%	64%
When a problem arises, promptly ask questions in the appropriate forum (e-mail, discussion board, etc.) (10)	5%	21%	74%

*

Darker shades indicate higher scores

Motivational Processes: Self-Efficacy Summary

Differences in self-efficacy scores related to final course grades varied by scale:

Self-Efficacy PERTS (General)

Final Course Grade	Scale Score (% Of Max)	N
A	86%	70
B	72%	50
C	66%	39
D or below	49%	19
W	54%	5

Close to 40% variation in scores with grades

Self-Efficacy - Learning OLSES (Technology)

Final Course Grade	Scale Score (% Of Max)	N
A	83%	70
B	81%	50
C	80%	39
D or below	78%	19
W	80%	5

Close to 0% variation in scores with grades

Supporting Motivational Processes in an Online Course

- Students submit weekly videos reflecting on their learning using Flip
- Videos follow the "Rose-Thorn-Bud" structure and it fosters beliefs towards efforts
- Sharing videos with peers promotes sense of belonging
- Instructor responds privately to videos to offer encouragement

Rose



Thorn



Bud



Metacognitive Processes: Time Management



Metacognitive Processes: Time Management Overview

We tested two time-management scales:

General

How much do you agree with the following statements about yourself in this class?

I allocate extra studying time for this class because I know it is time-demanding. (1)

I try to schedule the same time every day or every week to study for this class, and I observe the schedule. (2)

Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days (3)

Related to Self-Efficacy

Q 2.2 So far in the semester in {this class} how good have you been at:

Scheduling your time to accomplish your tasks in this class? (1)

Finishing your homework assignments by deadlines in this class? (2)

Studying for this class even when there are other things to do? (3)

Finding strategies to succeed in this class? (4)

Motivating yourself to do schoolwork for this class? (5)

Avoiding being distracted from schoolwork for this class by non-school related platforms (e.g., YouTube, Instagram, etc.)? (6)

Time Management: General Aspects

Self-reports show that most students invest time in an ideal / socially desirable way.

How much do you agree with the following statements about yourself in this class?	Strongly Disagree or disagree	Neither Agree nor Disagree	Agree or strongly agree
I allocate extra studying time for this class because I know it is time-demanding. (1)	9%	19%	72%
I try to schedule the same time every day or every week to study for this class, and I observe the schedule. (2)	18%	18%	63%
Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days (3)	13%	19%	68%

* Darker shades indicate higher scores

Time Management: specific aspects

When asked how good they are at executing time management related tasks, positive self-reports decrease.

Q 2.2 So far in the semester in {Course}, Section {SectionNumber}, how good have you been at:	Not good at all or not good	Good at times	Good or really good
Scheduling your time to accomplish your tasks in this class? (1)	13%	29%	59%
Finishing your homework assignments by deadlines in this class? (2)	6%	17%	76%
Studying for this class even when there are other things to do? (3)	15%	29%	56%
Finding strategies to succeed in this class? (4)	11%	18%	71%
Motivating yourself to do schoolwork for this class? (5)	13%	23%	64%
Avoiding being distracted from schoolwork for this class by non-school related platforms (e.g., YouTube, Instagram, etc.)? (6)	21%	25%	54%

* Darker shades indicate higher scores

Time Management and Grades

Differences in time management scores related to final course grades varied by scale:

Time management - OSLQ

Final Grade	Scale Score (% Of Max)	N
A	78%	70
B	78%	50
C	73%	39
D or	77%	19
W	89%	5

Close to 0% variation in scores with grades

Self-Efficacy on Time management - UCI-MUST

Final Grade	Scale Score (% Of Max)	N
A	82%	70
B	74%	50
C	67%	39
D or	51%	19
W	68%	5

Close to 30% variation in scores with grades

Faculty Perspectives on Time Management

- Faculty report that time management is challenging for students in online courses
- Biggest hurdle for online students: "**Managing your own time is harder.**"
- Procrastination challenges: "And I've noticed that **no matter when you set the deadline**, half of the class is going to work **to the deadline.**"

Student Perspectives on Time Management

- Students shared strategies that work for managing their time in online courses
- Reviewing work required and planning: "Every week, I **set a calendar, and I go through all the classes** on a Sunday... and I see what **need to do or what I haven't done...**"
- Allocating time by course difficulty: "I'll do four hours [**for biology**] since that's the longest and hardest..."

Supporting Metacognitive Processes in Online Courses

- An instructor-created video series that:
 - Sets expectations for the amount of time students will spend on the course each week
 - Offers tips on using course technology
 - Provides guidance on how to approach homework and studying
- Low-stakes graded quizzes embedded in each video in the series



Applied Learning Processes: Help Seeking



Applied Learning Processes: Help-Seeking

We tested two help-seeking scales:

General

How much do you agree with the following statements about yourself in this class?

I find someone who is knowledgeable in course content so that I can consult with them when I need help (1)

I share my problems with my classmates online so we know what we are struggling with and how to solve our problems (2)

If needed, I try to meet my classmates face-to-face (3)

I am persistent in getting help from the instructor through email (4)

Focused on help-seeking behaviors

Q 3.2 In {this class}, how confident are you that you could:

Call another student if you had a question about an assignment? (1)

Count on other students to be helpful in reminding you when assignments are due or when tests are approaching? (2)

Get the notes from other student(s) if you miss class? (3)

Go to another student for emotional support? (4)

Ask another student for money? (5)

Talk about an academic problem with the instructor? (6)

Talk about a personal problem with the instructor? (7)

Help-Seeking: General Aspects

Approximately half of the students, sometimes more, report not engaging in general help-seeking behaviors.

How much do you agree with the following statements about yourself in this class?	Strongly Disagree or disagree	Neither Agree nor Disagree	Agree or strongly agree
I find someone who is knowledgeable in course content so that I can consult with them when I need help (1)	23%	24%	53%
I share my problems with my classmates online so we know what we are struggling with and how to solve our problems (2)	55%	22%	23%
If needed, I try to meet my classmates face-to-face (3)	69%	19%	11%
I am persistent in getting help from the instructor through email (4)	24%	36%	40%

* Darker shades indicate higher scores

Help-Seeking: Specific Behaviors

The proportion of students unlikely to ask for help grows when we inquired about more specific help-seeking behaviors:

Q 3.2 In {Course}, Section {SectionNumber}, how confident are you that you could:	Not confident at all or not very confident	Somewhat confident	Confident or very confident
Call another student if you had a question about an assignment? (1)	60%	18%	22%
Count on other students to be helpful in reminding you when assignments are due or when tests are approaching? (2)	62%	20%	18%
Get the notes from other student(s) if you miss class? (3)	54%	22%	24%
Go to another student for emotional support? (4)	71%	15%	14%
Ask another student for money? (5)	90%	6%	4%
Talk about an academic problem with the instructor? (6)	14%	27%	58%
Talk about a personal problem with the instructor? (7)	50%	26%	24%

* Darker shades indicate higher scores

Help-Seeking and Grades

Differences in help-seeking scores related to final course grades show little covariation:

Help-seeking OSLQ

Final Grade	Scale Score (% Of Max)	N
A	55%	70
B	57%	50
C	56%	39
D or below	52%	19
W	42%	5

Close to 0% variation in scores with grades

Help-seeking UCI-MUST

Final Grade	Scale Score (% Of Max)	N
A	45%	70
B	53%	50
C	49%	39
D or below	41%	19
W	34%	5

Little variation in scores with grades

Faculty Perspectives on Help-Seeking

- Faculty contrast benefits of face-to-face vs. online challenges.
- Help-seeking benefits of face to face: “In a classroom, they can immediately turn to their neighbor and say, 'What did he say? What does that mean?' They can raise their hand and they can get that **immediate feedback.**”
- Help-seeking challenges of online: “I really, really encourage them to have a **one-on-one meeting with me**, because in five minutes, I can save them hours of time, but they just are so **resistant to meeting.**”

Student Perspectives on Help-Seeking

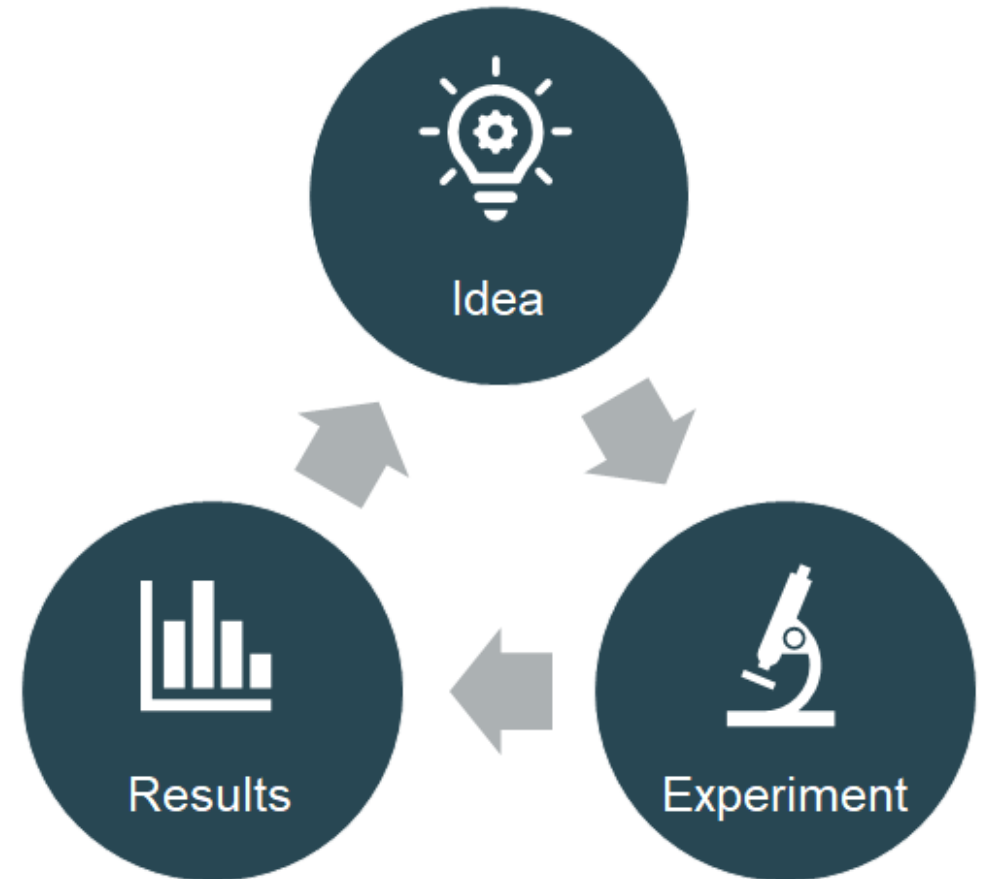
- Students contrast benefits of face-to-face vs. online challenges.
- Help-seeking benefits of face to face: “After each lecture, I have the opportunity to go ask the professor about anything that I didn't understand during the lecture.”
- Help-seeking challenges of online: “If I email any professor about something I don't understand, they reply, would they respond to me like within two days sometimes.”

Rapid Cycle Experiments: Instructional Components



What are Rapid Cycle Evaluations?

- Rapid cycle evaluations allow instructors to test a specific strategy (or combination of strategies) in course sections to help students develop SDL skills.
- These strategies are research-based approaches to supporting students in managing their learning in online courses more effectively.



RCE Design Options



One course instructor, one section per term



Term 1



One course instructor, 2+ sections in Term 1



4+ instructors, 1+ sections each in Term 1



Term 2



I Intervention
C Comparison

Additional criteria and considerations:

- STEM course (*preferred*) or social, behavioral, or economic sciences
- Fully online course (*preferred*) or hybrid course with online component
- Required course for major (*preferred*) or elective

Rapid Cycle Experiments: 3-part video series



Series of 3 videos



Sense of
belonging

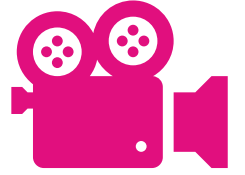


Time
management



Growth
mindset

Each video follows a consistent structure



- Part 1: Overview
 - What students will learn in this video
- Part 2: Introduction to the SDL skills/mindset
 - Growth mindset, sense of belonging, time management
- Part 3: Strategies to develop the SDL skills/mindset
 - Two or three strategies to encourage development of these skills/mindset
- Part 4: Closing
 - Where can students find more resources to develop SDL skills/mindset

Each video includes a reflection activity



- Self-rating
 - For each of the following statements, rate yourself:
 - It's personally important to me to pass this class.
 - I seek help when I am struggling.
- Self-reflection
 - Reflect on the student story shared in the video. How did this student structure their learning time? What strategies did they use?
- Planning
 - Which of these strategies do you plan to apply in this course? For your chosen strategy, outline a plan for how you will implement it.

Key takeaways from fall 2022



- Students engaged meaningfully with reflection questions for both videos, providing thoughtful answers which demonstrated an understanding of the point of the student stories.
- Students outlined concrete strategies they will implement moving forward, including creating or maintain peer study groups and structuring their learning time to include breaks.
- The biggest challenges students shared included the lack of interest of their peers to engage in the class and group work.

Rapid Cycle Experiments: Prompts



Recap: Prompt Strategy



Required SDL prompts	Timing
<ul style="list-style-type: none">• What assignments and other coursework do you need to complete this week for this class? What information, resources, or help do you need to complete this week's coursework?	Starting at 1x/week
<ul style="list-style-type: none">• Have you scheduled a specific time to complete this week's work for this class? [If no] When will you complete this week's work for this class?	Starting at 1x/week
<ul style="list-style-type: none">• What questions from your last [assessment] did you not understand? What resources and strategies do you need to improve your understanding?<ul style="list-style-type: none">• <i>[Includes customized list of resources for each institution]</i>	Starting with each major assessment
<ul style="list-style-type: none">• Which concepts from this class do you feel you mastered this week? Which concepts are you still struggling with?	Starting at 1x/week

Students' Named Study Activities



- Students named many specific study activities that they needed to complete and/or schedule in the prompt responses:
 - Watching/Rewatching video lessons and worked examples
 - Completing/Recompleting practice problems
 - Making office hours appointments
 - Making flash cards, diagrams, visual aids
 - Researching questions they didn't understand online
 - Seeking out their own additional resources
 - Making tutoring appointments (ex: institutional tutoring center/services)

Student Quotes



- “So far this week I have read chapter 6 of the textbook, reviewed the PowerPoint slides, and completed the class discussion. This means I still have to submit the RVA, homework, and quiz. I feel that I have access to all the resources needed to complete this week's coursework.”
- “I should be putting in more time to get work done for this class. With the final project almost among us it is time to start putting in more hours to have the project complete. This week's HW should be completed soon. On the weekends using Khan Academy for SQL has become useful in prepping me for the week and giving me a different explanation on the work, although the professor's labs tend to be best to help me understand and working hands on with what I am learning.”

Instructor Implementation



- Instructors overwhelmingly found Prompts straightforward to implement.
- Instructors found it helpful to adapt Prompts in several ways in fall 2022, which led to us codifying three types of optional adaptations for spring:
 - Including instructor-created, content-specific prompts
 - Ex: “One of the key concepts over the past week was [concept]. What is the most important information about [concept]? How would you explain it to a friend who was absent this week?”
 - Changing Prompts frequency if students find them repetitive
 - Adapting pacing for highly asynchronous courses where weekly administration doesn’t fit the course structure

Rapid Cycle Experiments: What's next?



Fall 2023 focuses on interactions



- **Facilitated Instructor-Student Interactions (FISI)**
 - Use existing technology platforms such as Zoom Channels and MS Teams to encourage more informal asynchronous interactions between instructors and students
 - Intended to promote more help-seeking behaviors between students and instructors, and increase connectedness
- **Student Peer Interaction & Networking (SPIN)**
 - Utilize existing platforms to encourage more academic-focused interactions between students about course content
 - Intended to promote more help-seeking behaviors between students and students, and increase belonging

How to get involved



- We're still recruiting from Palm Beach, Bunker Hill, Portland State University, and Wake Tech
- If you're from one of these institutions and would like to participate in the RCEs this fall, please contact Hannah.Cheever@sri.com for more information

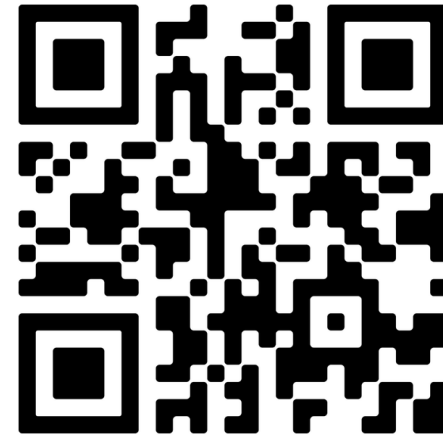
Q & A



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