

# Building Students' Confidence and Learning Skills in Online Classes: Lessons from the Postsec Collab

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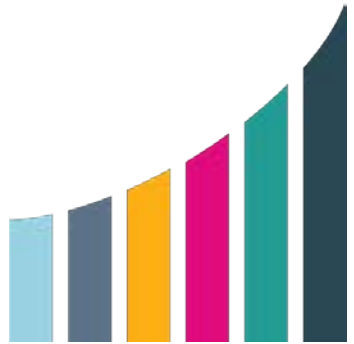
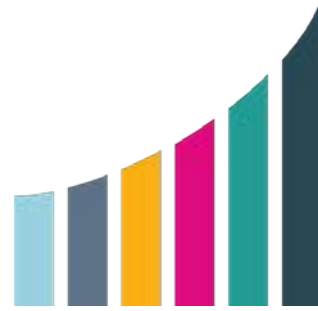
**Hannah Cheever, SRI Education**

Wednesday, February 19, 2024

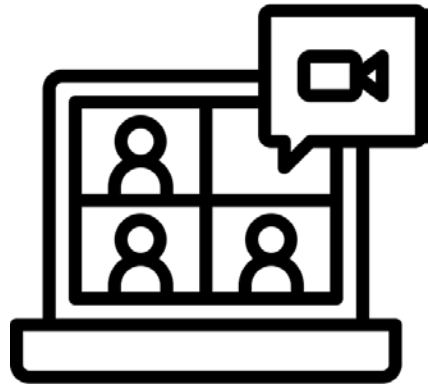
ATD DREAM 2025 Conference



# Agenda



**Overview of the Collaborative**



**Online STEM learning context and challenges**



**Strategies to support SDL skills & mindsets**

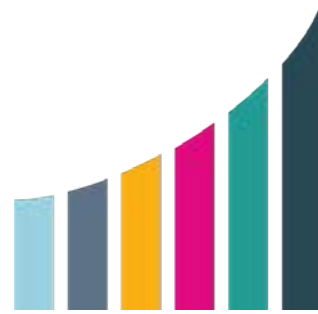


**Research findings**



**Casemaking**

# Postsecondary Teaching with Technology Collaborative



An IES-funded 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.

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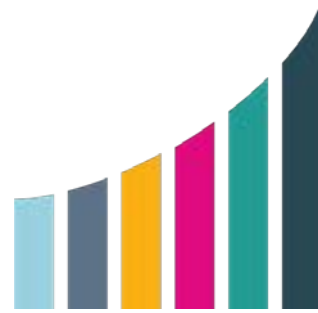
**CCRC** COMMUNITY COLLEGE  
RESEARCH CENTER

Teachers College, Columbia University

Achieving  
the **Dream**



# Welcome!



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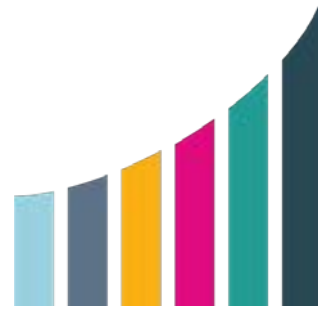
In the poll,

- **What is your role at your institution?**
- **What do you want to know more about?** (multiple choice & can select multiple options)
  - Supports for students in online courses**
  - Self-directed learning (SDL) theory**
  - Examples of SDL instructional strategies in online STEM courses**
  - Our research on the effectiveness of SDL instructional strategies**
  - Effective casemaking for more SDL support at your institution**

# Challenges in online learning



# Students face challenges in online courses



Student outcomes are generally worse in online courses and degree programs than comparable face-to-face ones



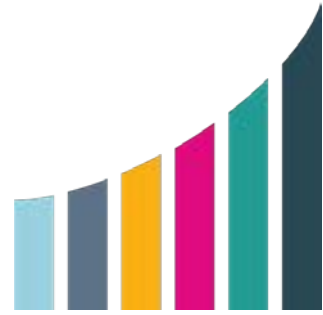
In some cases, achievement gaps are wider in online environments



Key factors: Greater demands on students' self-directed learning capacities; Need for belonging and community



# Students face additional challenges in STEM learning



Unwelcoming environment

Individual sink-or-swim culture

Content-heavy courses

Unclear personal relevance



Belonging uncertainty

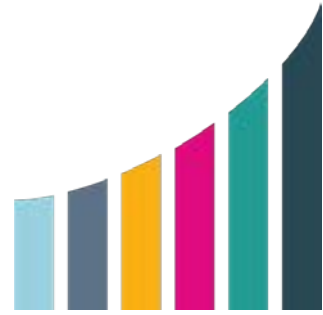
Stereotype threat

Inequitable opportunities to develop self-directed learning skills

Feelings of isolation exacerbated in online formats

(e.g., Hatfield et al., 2022; Murdock-Perriera, 2019; National Academies of Sciences, Engineering, and Medicine, 2023; Yarnall et al., 2023)

# Perspective from a Partner Institution - Odessa College



Achieved high course success rates overall, yet online courses have unique challenges that require different support strategies.



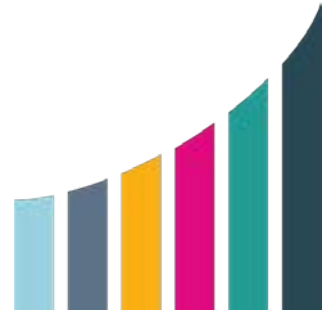
Many students in online courses struggle with staying motivated, managing their time, and seeking help when needed.



Significant increase in online enrollment, reflecting the growing demand for flexible learning options.



# Odessa College's Reasons for Getting Involved in the Collaborative



Students lack the structure of in-person engagement, making it easier to fall behind or disengage.

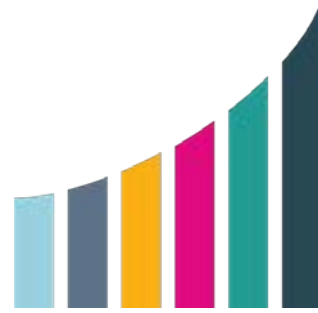


Provided an opportunity to test new approaches for helping online students build learning habits that drive success.



Focus on self-directed learning (SDL) strategies aligned with Odessa College's goal of helping students develop these critical skills

# The 4 Faculty Commitments



Interacting with students by name during the first week of a new term.

Meeting with students one-on-one and communicating routinely about their course performance.

Monitoring student behavior and progress and intervening when an issue arises.

Becoming a “master of paradox” (i.e., maintaining a structured course while allowing for some flexibility).

# The 4 Student Commitments



Commit to completing what you start.

Commit to asking questions and using support resources.

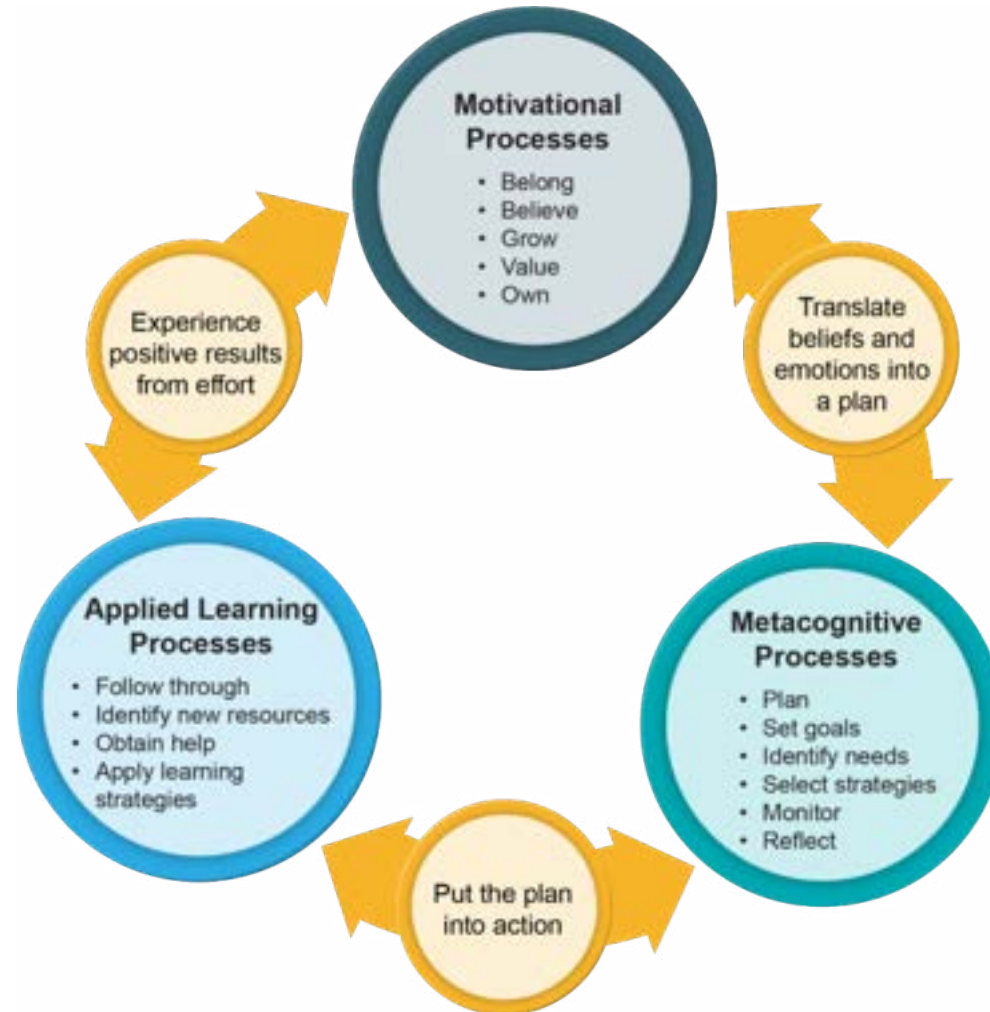
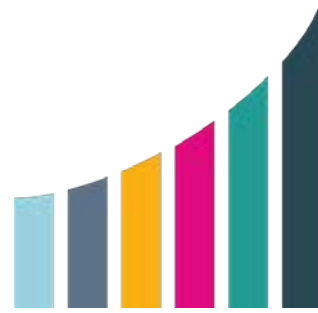
Commit to attending class and attempting each assignment.

Commit to developing well organized and disciplined work habits.

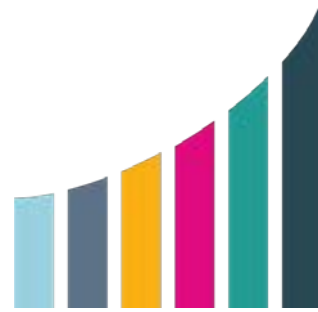
# Framework for Self-Directed Learning



# Framework for self-directed learning



# Three SDL processes



**I can:** Motivational processes provide the foundational emotions and beliefs that energize students' approach to learning. These are the emotions and beliefs around learning.



**I plan:** Metacognitive processes translate those emotions and beliefs into an action plan. This includes understanding how to manage learning and actively adjust to the demands of any learning task.

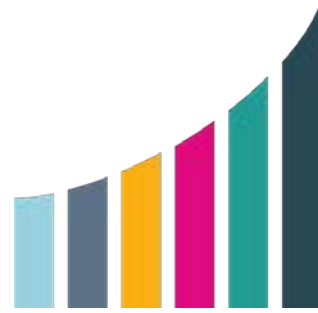


**I do:** Applied learning processes put that plan into action and adjust it as needed. These are learning techniques and self-discipline strategies that help students take greater ownership of achieving specific learning goals.

# Sources of Input Used to Develop and Refine Instructional Strategies

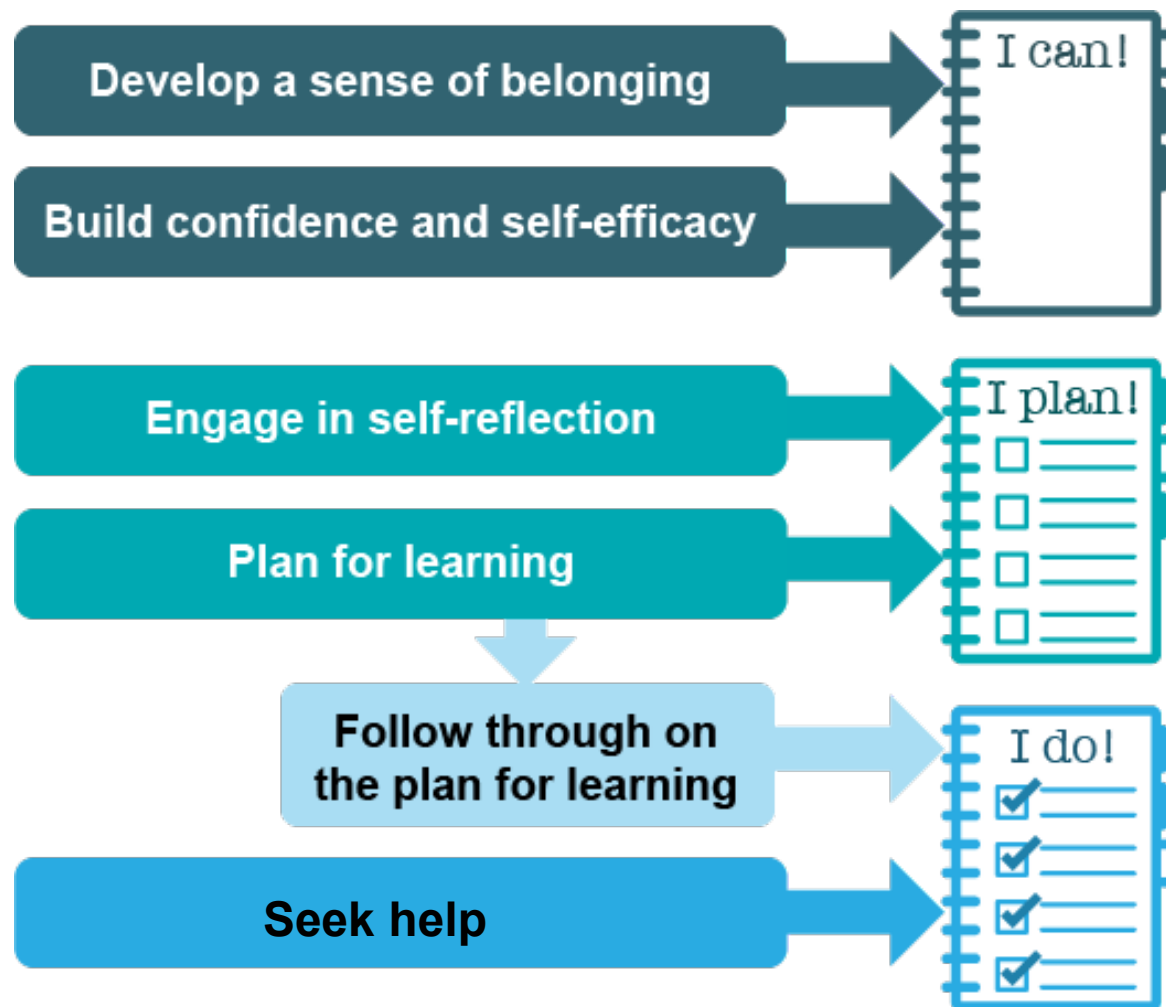


# Collab Research Activities





# Strategies target 5 student skills



# Strategies co-developed and tested

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Strategies were identified via literature review and systematic database review,<sup>1</sup> and co-developed/adapted for online courses with instructors at four partner institutions.



Assign **videos** to support sense of belonging, planning for learning, confidence, and self-efficacy through a growth mindset

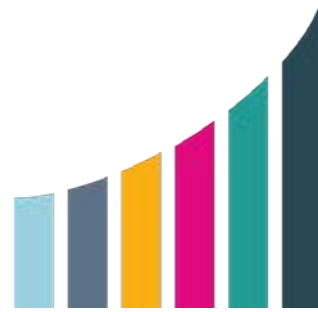


Set up automated **prompts** focused on help seeking, task-planning, and reflection



Use technology to support student-peer interaction and networking (**SPIN**) and promote help seeking

# Resources and guidance



Visit the event page for today's session at <https://postseccollab.org/events/> to access draft versions of the instructional strategies and implementation guidance.

## Videos

**Self-Directed Learning Videos**

Three videos with corresponding reflection questions encourage the self-directed learning (SDL) skills to examine and make impacts to reflect on how they can practice these skills in their own courses. As students watch these videos they will become familiar with how to build motivation through an informed sense of belonging and a growth mindset, and how to implement the applied learning process of your organization. These skills – including a sense of belonging, developing a growth mindset, and structuring learning time effectively – are essential areas of practice and provide engagement, contributing to improved student outcomes.

Each of the three videos are shown below the beginning of the course, with a corresponding reflection activity. By engaging with these videos at the beginning of the course, students will have the opportunity to apply their learning across the course. The video package includes reflection prompts that can be used flexibly and compared at any point during the course.

The videos series includes three videos:

1. Video 1: Building a Growth Mindset for Success
2. Video 2: Making that Learning Time
3. Video 3: Developing a Growth Mindset

Each video should take students about 10 minutes to complete, with 10 minutes to view the video and 10 minutes to reflect.

**Using Videos in Your Teaching**

The table below provides YouTube links for the three 10-minute videos, a brief overview of intended outcomes, and teaching and timing. Each video will be shown once during the course, at the times outlined in the table, and followed by a reflection activity. Instructors can conduct the reflection questions as a discussion board prompt, student records, or course assignment. Each instructor has built in a sign-up with an instructor to receive the sign-up of the video. This is a unique 10% split-up solution that is the focus of the video. The video then allows students to complete the video and answer by identifying the reflection activity.

Video	Key Implementation Consideration	Timing
Video 1: Building a Growth Mindset for Success	Before introducing this video, students should have the time to watch or listen to the video, and there are reflection questions to complete after watching.	First week of the course
Video 2: Making that Learning Time	Each instructor should be prepared to answer questions about the video. This video is a 10% split-up solution of the course.	Midway through the course
Video 3: Developing a Growth Mindset	Students should be encouraged to reflect on their own growth mindset and how it impacts their learning. This video is a 10% split-up solution of the course.	After the last week of the course

Using Videos: Self-Directed Learning Videos that are at October 2024

## Prompts

**Reflective Prompts**

Reflective prompts invite students to prepare to study and regularly check their learning progress. Building habits in planning to study and monitoring progress in learning is associated with positive gains in academic performance. Such habits strengthen self-regulation practices that help students manage learning and adjust to the demands of college courses. Such habits also enable students to take greater ownership of addressing their learning goals, leading to higher or control and ultimately, increased persistence. Instructors can use these 'best practice' prompts to gain insight into their students' academic needs and make real-time adjustments to their instruction and aligned supports.

Using prompts integrated at strategic intervals throughout a course, students can plan their time, place, resources, and strategies for studying and adjust their learning approaches as needed. The prompts package includes three types of prompts:

1. A reflective prompt that can be used flexibly and compared at any point during the course.
2. An assessment prompt for use before and after a major assessment, exam, or assignment.
3. A summary/reflective prompt in the form of a message to a friend or family member.

Each prompt activity should take students between 10 and 20 minutes to complete.

**Using Prompts in Your Teaching**

The table below provides a brief overview of the three types of prompts and their frequency and timing in the course. Using multiple prompts and varying prompts will strengthen and reinforce students' reflective practices, at different points during the course. Instructors should consider their students' unique needs and adjust their learning approaches over the course of the term.

1. Reflective prompts can be implemented at any point during the course, and the three questions can be combined into a single activity or discussion board post. They should be assigned at least once during the term and can be repeated more often if time allows.
2. The assessment prompt is divided into two parts: the pre-assessment should be assigned about a week before an exam, assignment, or major assessment is due. The post-assessment should be assigned once students have received their grade and feedback on the assessment. The assessment prompt will be most useful when assigned early in the course so that students can adjust their preparation approaches for future assessments.
3. The message to a friend or family member can be assigned during the first few weeks of the course. This message should be completed in a message to a friend or family member. These students' personal messages can then be integrated in future courses to reinforce and encourage future students in your course.

Using Prompts: Reflective Prompts that are at October 2024

## SPIN

**Student Peer Interaction and Networking (SPIN)**

SPIN activities support students' motivation by helping them feel a greater sense of belonging in the class. There are two primary SPIN activities:

1. An introductory questionnaire administered during the first week of class.
2. Collaborative activities to be completed during the course.

These activities support students by providing a structured way for students to connect with one another. Faculty in general should have clear evidence that these activities can be independently supported or students connecting with other students greatly impacting to work help-seeking behaviors with other students.

**Using SPIN in Your Teaching**

The text below provides a brief overview of the two SPIN activities and their frequency and timing in the course.

**SPIN Activity 1: Introductory questionnaire**

The introductory questionnaire should ask students to share information about how they get to class and another factor. This shared information and experiences, and provide a sense of belonging in which students can 'bring that to class' to class.

**SPIN Activity 2: Collaborative activities**

1. **Fun**
  - What are the primary questions in activities that bring you the most joy?
  - What is your favorite type of thought?
  - When was the last time you had a good idea? What was it about?
  - What's something you did recently that you're particularly proud of?
  - What's a hobby or interest you have that you don't think most people think about?
  - What's a movie, book, or TV show that you love, and why?
  - What's a quote or motto you have that you love, and why?
2. **Support**
  - How do you feel about your class so far?
  - What time of day are you usually in school each day?
  - How do you feel about it?
  - What do you think is going on in your class?
  - What advice do you have for other students taking an online course or math course?
  - How do you prefer to communicate with other people?

Select questions that address students' strengths, provide opportunities for students to connect with one another, and support students' persistence and growth. Then, create a summary of students' responses and share them with the class.

Finally, provide other a synchronous or asynchronous space to share the summaries of student responses. Encourage students to share their feedback to what they learned about their peers with one another. Instructors are encouraged to assign the questions for reflection and share their answers. Instructors can also use the questions to help other instructional activities, including leading groups.

Using SPIN: SPIN that are at October 2024

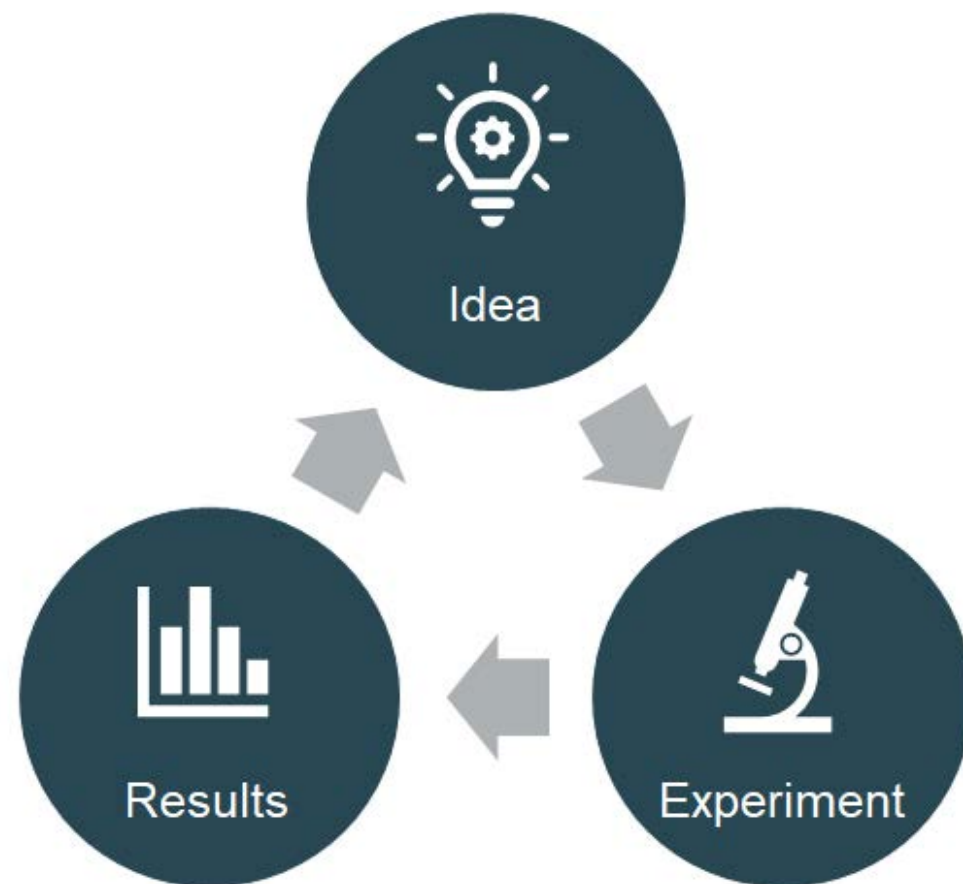
# What have we learned from testing the strategies?



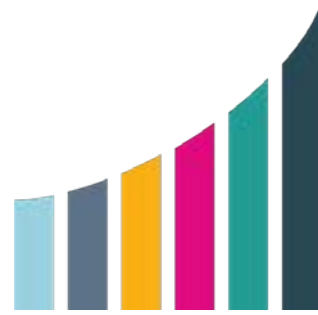
# Rapid cycle experiments (RCEs)

RCEs allowed instructors to test a specific strategy (or combination of strategies) in course sections that are designed to help students develop SDL skills.

Findings from these formative studies, triangulated with other sources, are helping to identify and refine promising strategies to include in our culminating resources.



# RCEs by the numbers



4 Institutions



3 Instructional strategies



4 Semesters



24 Instructors



105 Course sections



2,000+ Students



# Research questions



## Research Questions

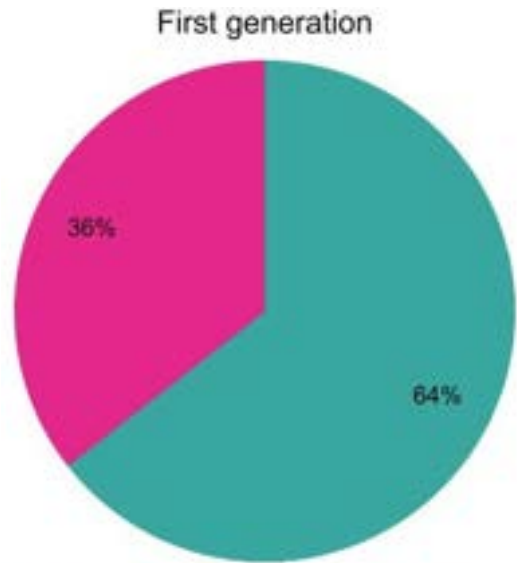
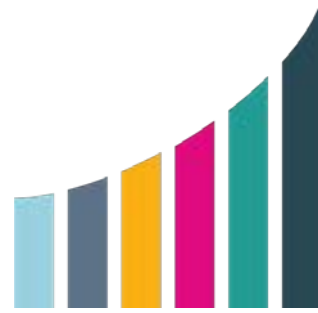
1. Compared to a business-as-usual condition, what is the effect of the opportunity to use a technology-based intervention on students' development and application of self-directed learning skills and academic outcomes?
2. How does this effect vary based on student characteristics?
3. What impedes or assists with the implementation of technology-based instructional strategies to support students' self-directed learning? What are student and staff perspectives on the strategies' strengths and opportunities for improvement?

# Findings: Survey and Administrative Data

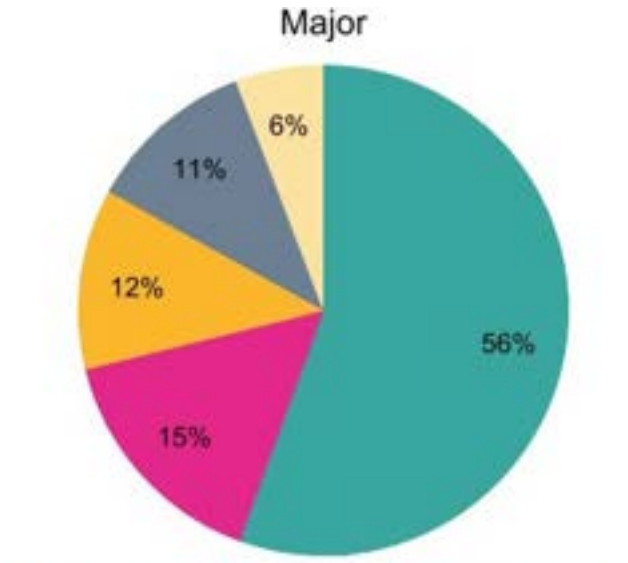




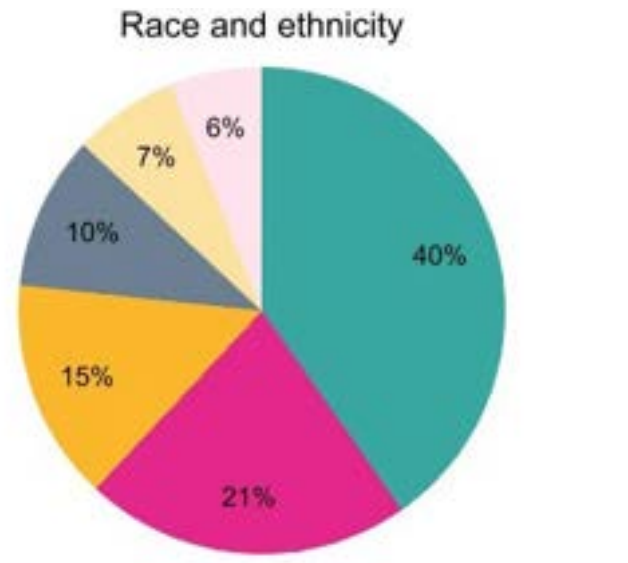
# Sample characteristics



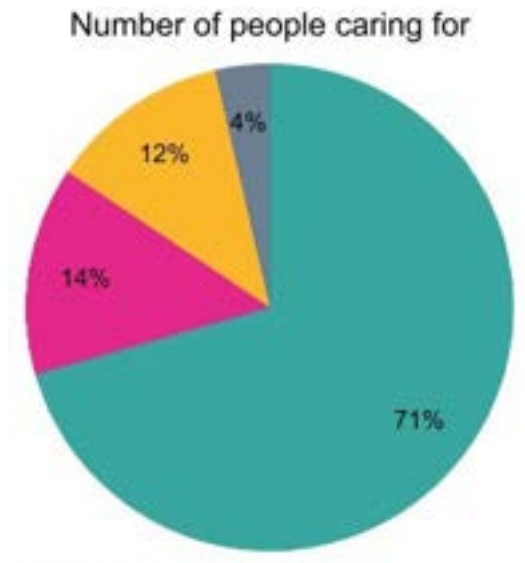
Not first generation    First generation



STEM    Social or behavioral sciences  
Other    No declared major  
Liberal arts



White    Black or African American  
Hispanic/Latino    Unknown  
Multiple Race/Ethnicity    Asian/Hawaii Pacific Islander



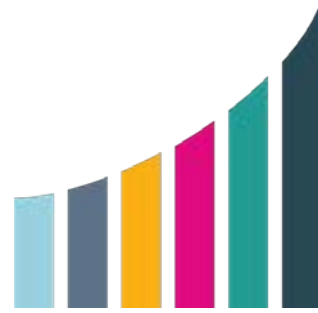
0 people    2-3 people  
1 person    4 or more people

Characteristic missing for one institution

Characteristic only available for survey respondents

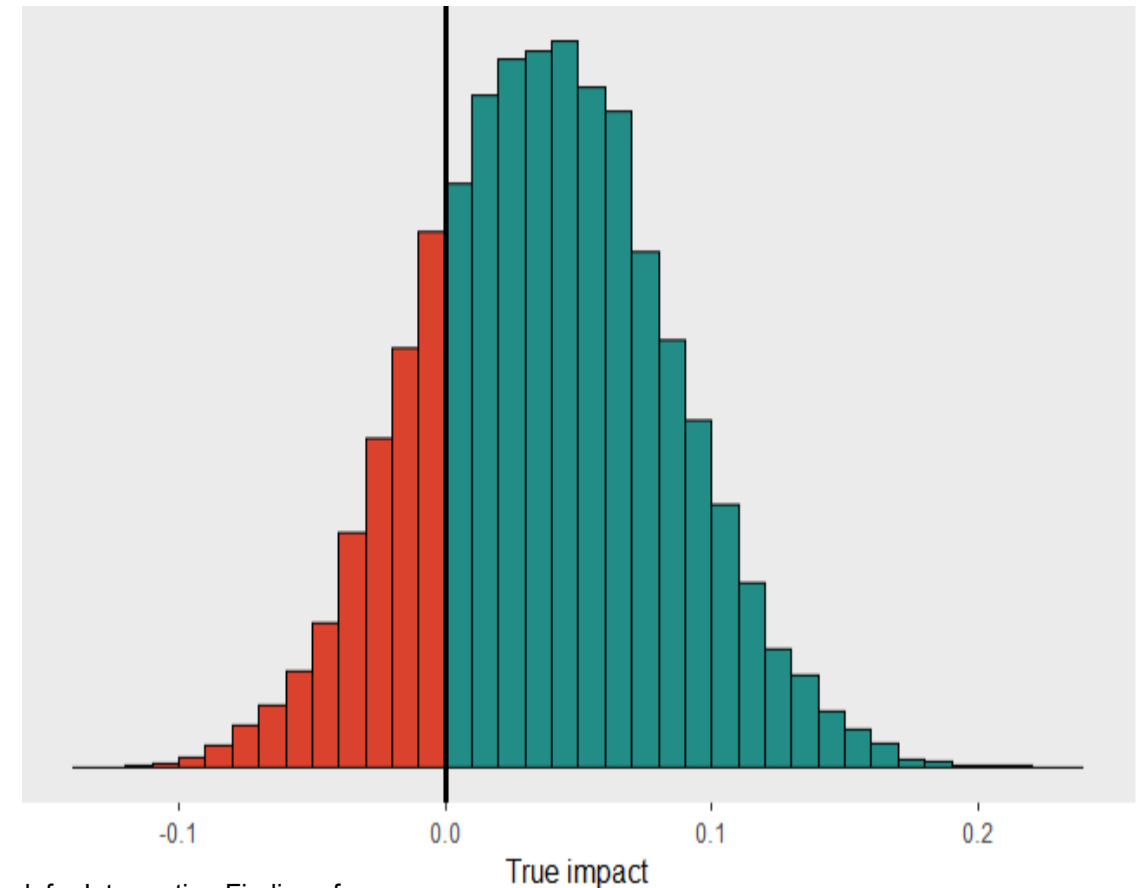
Characteristic only available for survey respondents

# Probability of positive impact on end-of-course grades

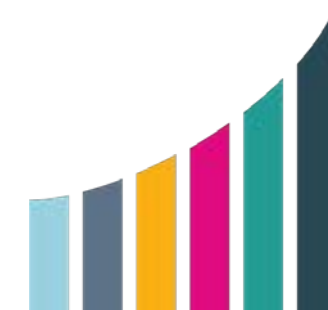


To account for smaller sample sizes, the study team conducted a Bayesian analysis, which incorporates prior evidence on other post-secondary strategies.

There is a 78% probability that our strategies had a positive effect on student achievement, specifically end-of-course grades.



# Findings from Survey



Being in a class implementing 1+ strategies positively impacted

- Students' use of more **learning strategies** (drawing diagrams, revising lecture notes, and revisiting practice problems)
- Whether students **evaluated** their learning strategies

This study found the effectiveness of the strategies were consistent across student populations and across different courses

Outcome Domains	Outcome (* = Admin. Data)	Impact Estimate (SD)	p-Value	Prob Positive Impact
Achievement	End-of-course grade*	0.05	0.450	78
Applied learning strategy outcomes	Learning strategies inventory	0.16	0.019	83
	Help seeking	0.08	0.314	72
	Time management	0.01	0.916	65
Metacognitive outcomes	Comprehension monitoring	0.08	0.283	81
	Debugging strategies	0.06	0.528	81
	Evaluation	0.21	0.006	98
Motivational outcomes	Goal-setting	-0.02	0.762	65
	Self-efficacy	-0.10	0.188	19
	Sense of belonging	-0.15	0.121	15
	Growth mindset	-0.07	0.341	34

# Findings: Instructor and Student Experiences



# Insights from instructors

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## Engagement

- Thoughtful integration into existing activities
- Incentives
- Variation of pacing

## Time and Value

- Worth their time
- Informed their insight of student content-related understanding
- Less sure if videos had an impact

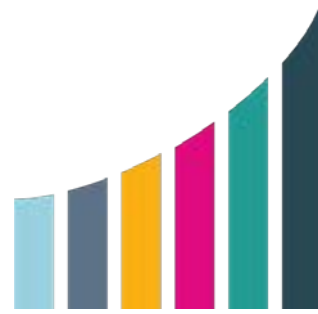
## Adjustments and Adaptations

- Continued participation led to comfort to make adjustments
- Adjustments often included change to pacing and focus of reflection questions

## Data

- Attuned to course grades, rates of withdrawal and completion
- Identified student learning needs

# Insights from students



“Learning about other people and what they experience, and finding myself in that same boat.”

- Student experiencing Prompts + Video

“That actually helped me think back on what I learned.”

“What didn't you understand so well this week? ... When I got asked that question I realized, ‘Oh, I really need to study this, because I didn't really understand it that well this week.’”

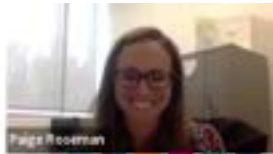
- Students experiencing Prompts

“I started a WhatsApp group for the class, only I think [with] 8 or so people. I was inspired by one of the videos to start the group.”

- Student experiencing Video



# Insights from Paige Roseman, psychology instructor, Wake Technical Community College



## Reflections from an instructor



Paige Roseman  
Psychology Instructor  
Wake Technical Community College



Videos



Prompts



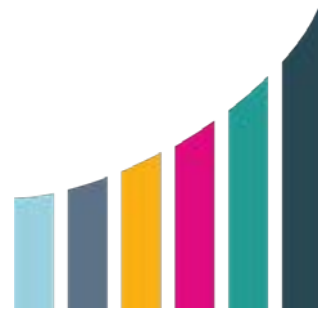
SPIN



# Effective Casemaking



# Support for students' SDL skill development likely depends on efforts at multiple levels of the institution



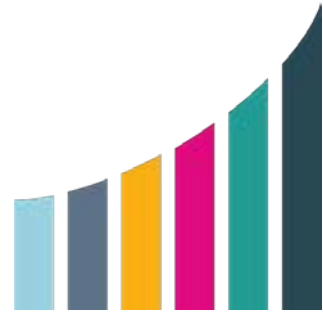
## Institution/Departments

- Elevate and prioritize SDL skills
- Develop scaled student supports, online learning resources, and PD opportunities

## Faculty/Classroom

- Integrate and contextualize skill supports into courses
- Use culturally affirming and responsive pedagogy and build relationships with students

# Casemaking for SDL at Odessa College



- ◆ **SDL isn't just about student success—it's about creating a structured learning environment that fosters long-term growth.**
- ◆ **Integrating SDL strategies into faculty support structures ensures adoption and sustainability.**

SDL support should be **built into course design and institutional teaching frameworks** rather than treated as an optional add-on.

- ◆ **Technology-enabled SDL interventions allow for scalable, institution-wide impact.**

Institutions should maximize **learning management system (LMS) features** to support SDL without adding to faculty workload.

- ◆ **Odessa College Leadership Institute – September 24th-26th**

# Group Discussion: Pick 1 Topic



## Topic 1 – Student experiences in online courses

- What is one strategy—that you have used or have heard others use—to learn about students (and their experiences) in your online courses?

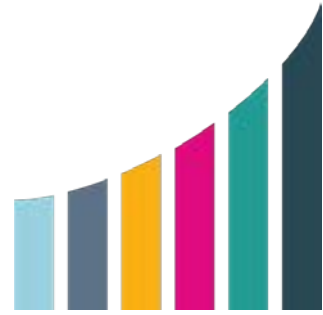
## Topic 2 – Strengthening instructional strategies in online courses

- What kinds of strategies do you use in online courses to support student non-cognitive learning about how to learn? In what ways do you think specific or different strategies are needed for online STEM courses?

## Topic 3 – Institutional supports for faculty teaching online courses

- How does your institution support instructors in their efforts to address non-cognitive skill development such as SDL skills and mindsets?

# Next steps for the Collaborative



- Refining the instructional strategies and integrating them into a comprehensive set of resources, in collaboration with our institution partners
- Piloting the set of instructional strategies in spring 2025 to test their usability, feasibility, and promise for improving student outcomes



Freely available compilation of resources for instructors, instructional designers, and other administrators to implement and institutionalize an integrated set of evidence-based instructional strategies to support students' development of SDL skills and mindsets in online courses

# Thank you!



Learn more about what we mean by self-directed learning.



Subscribe to our newsletter.



Find access to instructional strategies here.



The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305C210003 to SRI International. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.