Postsecondary Teaching with Technology Collaborative

Supporting Student Success in Online Courses

Insights from Students and Faculty

April 3, 2025

Agenda

1. About the Postsecondary Teaching with Technology Collaborative
2. Perspectives from Students in Online Courses
3. An Instructional Model for Self-Directed Learning
4. Panel Discussion

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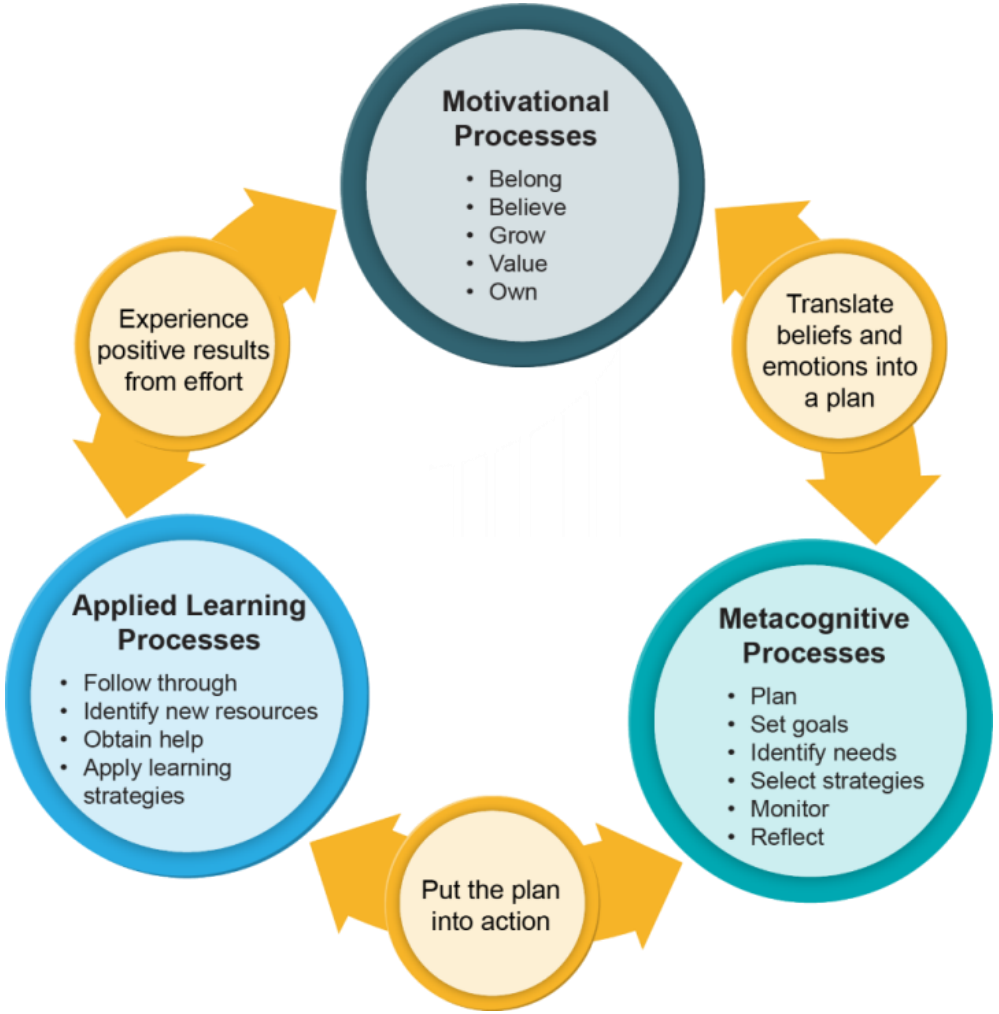
CCRC COMMUNITY COLLEGE RESEARCH CENTER

Teachers College, Columbia University

Achieving the Dream

Framework for Self-Directed Learning



Why online STEM 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

(Jaggars and Xu, 2014; Xu and Xu, 2020)

Perspectives from Students in Online STEM Courses

Promoting motivation and learning

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Beyond Engagement

FEB 2025 BRIEF

- Interviews with **25 students from 8 institutions**
- Students enrolled in **asynchronous, synchronous, and hybrid** courses
- Reflections on **online experiences** important for success

Beyond Engagement:
Promoting Motivation and Learning in Online Courses

By Susan Bickerstaff, Akilah H. Thompson, Keena P. Walters, and Jenivee Gastelum

February 2025 | Brief

In the years following the COVID-19 pandemic, online courses have become an increasingly common feature of the higher education landscape. Online coursetaking is especially important for students who may need convenience in pursuing their education goals, including students enrolled at community colleges who work full- or part-time, students who are parents, returning adult students, and rural students. Online course offerings provide flexibility and expanded opportunities for students to pursue postsecondary education.[1] Yet, while online formats increase access, they also pose potential difficulties, such as securing reliable internet access and navigating new technology systems. What is more, they tend to generate feelings of isolation among those who are taking the courses.[2] Faculty teaching online courses also report challenges in promoting student engagement and encouraging strong student performance.[3] Indeed, research has documented concerning gaps in performance between students enrolled in face-to-face and online courses—with greater disparities among students from low-income and racially marginalized
inclusive and supportive instructional approaches.[4] Thes
STEM courses, which serve as important gateways to

With these issues in mind, the Postsecondary Teaching
how to improve teaching in online STEM courses. In pa
(including seven community colleges), we aim to develo
instructors support their students in developing what w
motivational, metacognitive, and applied learning proce
on their learning, plan and set goals, and adjust their st
SDL framework, which guides the Collaborative's resea

Studies on SDL have focused on evaluating the effecti
example, students' growth mindset and their sense of b
the Collaborative's partner institutions has shown ways
such as college orientations and affinity groups—have
SDL skills. This research has also shown that faculty n
development into their online instruction.[7]

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Findings

- Interactions with peers and faculty promote **motivation**
- Students are seeking effective **applied learning** approaches
- Instructional practices can mitigate barriers to **help seeking**
- Students bring **strengths to SDL** skill development

Recommendations

1. Utilize reflection activities to allow students to recall previously learned strategies as well as sources of motivation and resilience.
    - Example: *What keeps you motivated when you encounter challenges in online courses?*
2. Maintain instructor-to-student connection to lower barriers to help-seeking and promote motivation, confidence, and belonging.
    - Example: *Require touch points early in the term through email, synchronous meetings, video messages, and other channels.*

Recommendations (cont.)

3. Have varied and frequent opportunities for student-to-student interactions beginning early in the term.
    - Example: *Set community guidelines or norms to be followed in group activities and discussion boards to maintain a positive online community.*

4. Provide students with guidance to navigate course resources.
    - Example: *Share ideal workflows, estimated times for assignments and studying, and predictable structures for deadlines.*

Instructional Model for Self-Directed Learning

Strategies to promote motivation, metacognition, and applied learning in online courses

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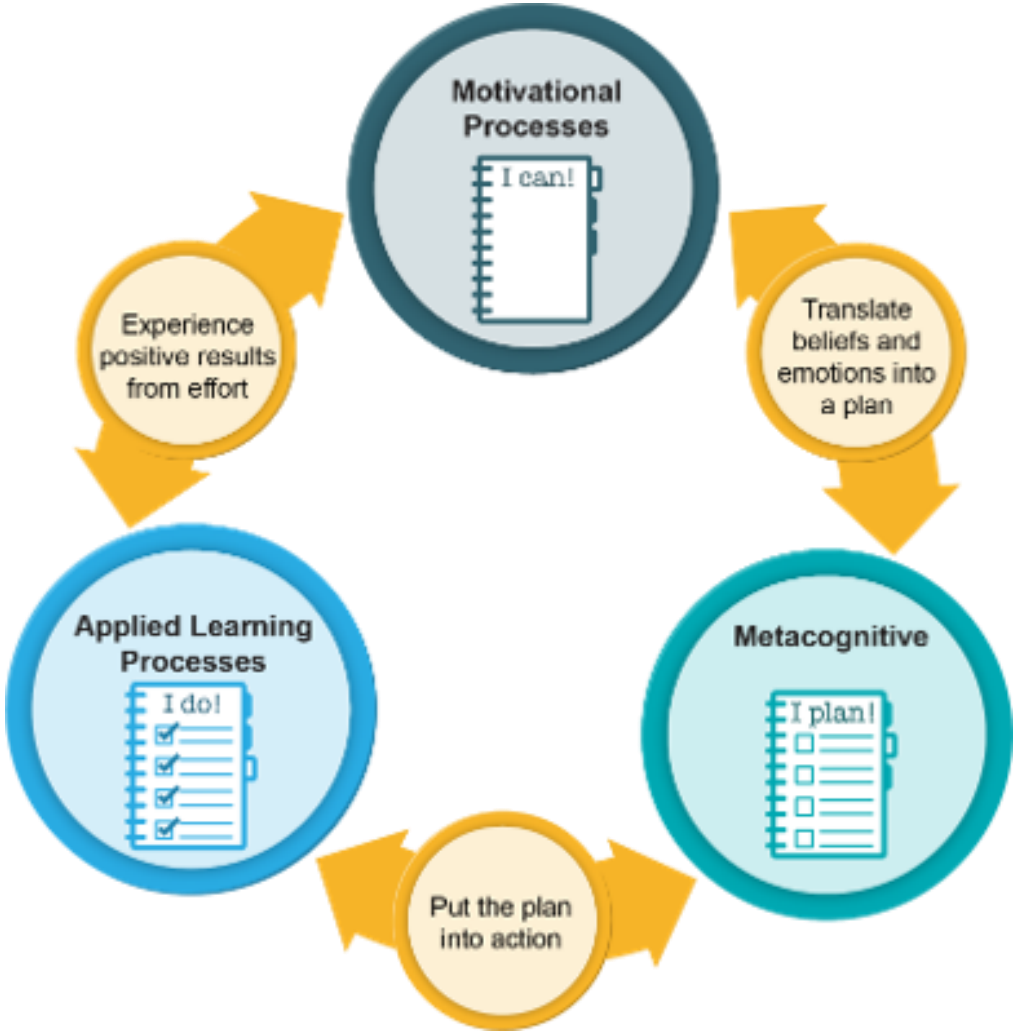
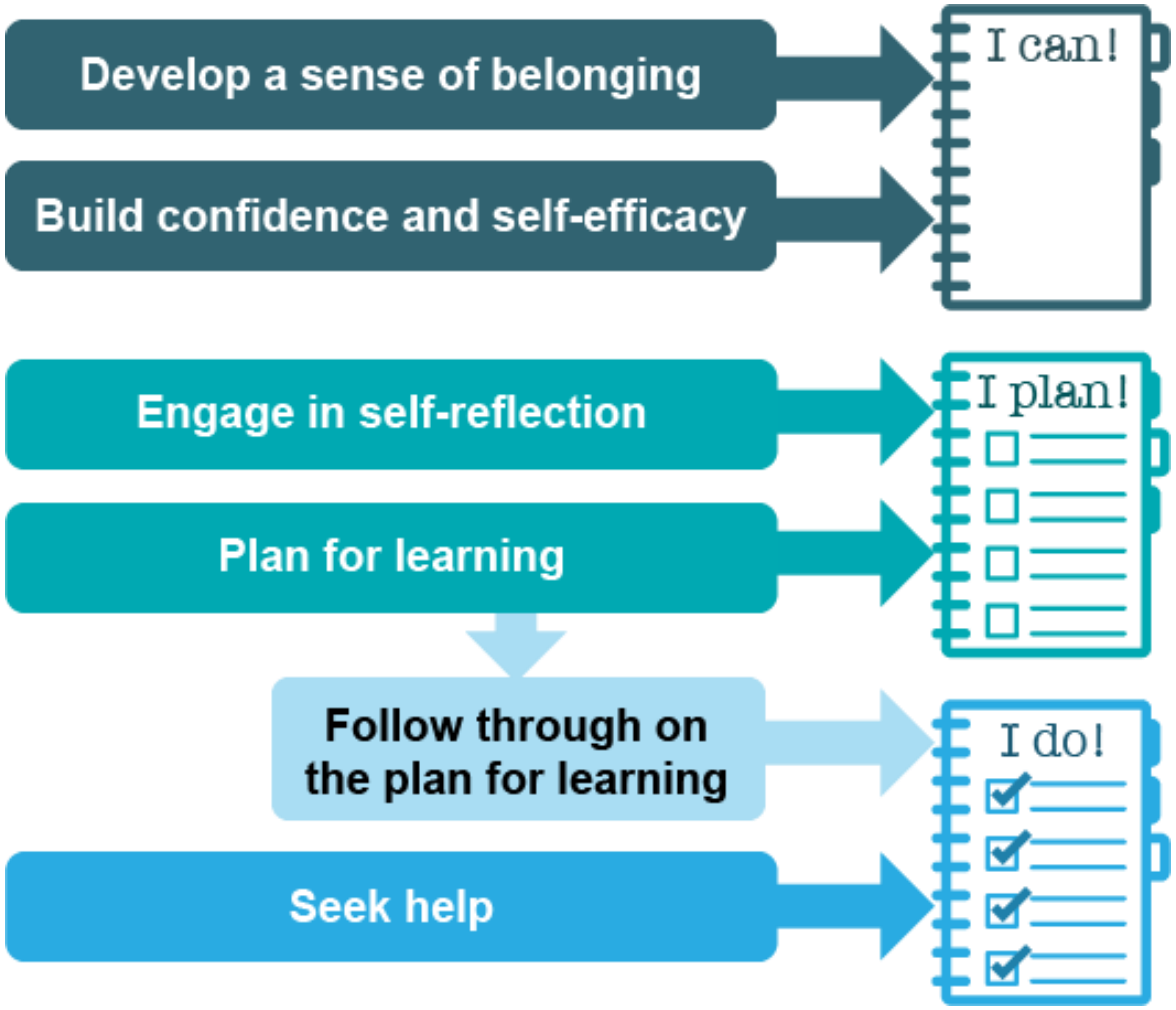
Three SDL processes



Targets 5 student skills



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Strategies co-developed and tested

Strategies were identified via literature review and systematic database review,[1] 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

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[1] To learn more about the Collaborative's research to inform the instructional strategies, read our white paper at https://postseccollab.org/teaching-and-designing-online-stem-courses-to-support-sdl-skills/.

Video series

Sense of belonging

Time management

Growth mindset

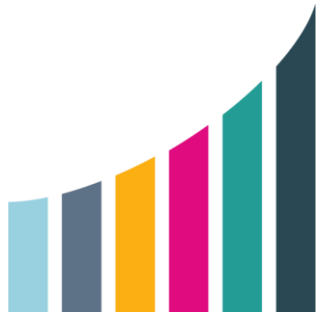
Each video follows a consistent structure:

- Overview of what students will learn
- Introduction to the SDL skill/mindset
- 2–3 strategies to develop the SDL skill/mindset
- Where to find additional resources

Each video includes a reflection activity:

- Self-rating on the SDL skill/mindset
- Self-reflection on the strategies presented in the video
- Planning for how to apply the strategies

Prompts: Metacognitive supports

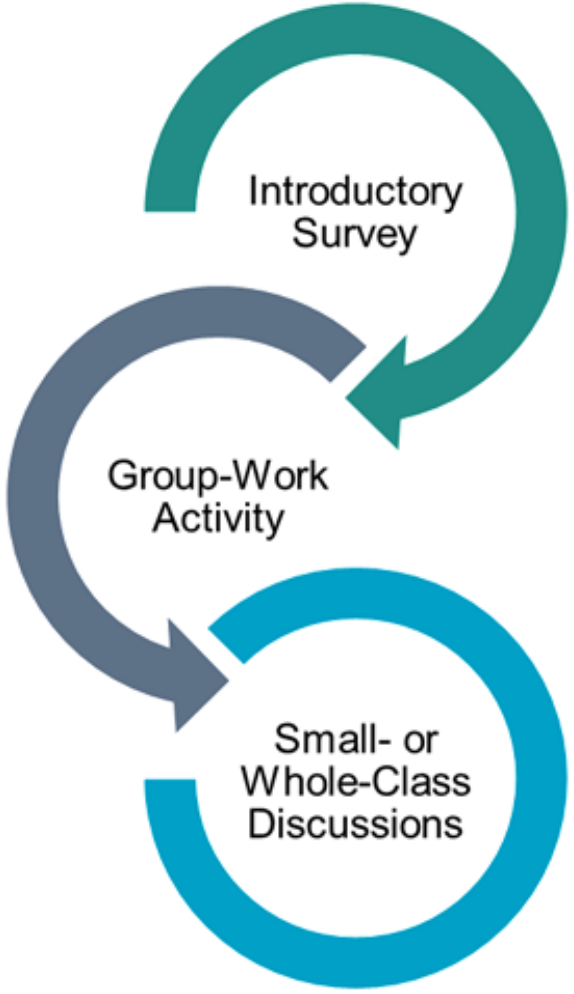


	Reflective prompts	Timing
Academic behaviors	• What assignments and other coursework do you need to complete this week for this class? What information, resources, or help do you need to complete this week's coursework?	Starting at 1x/week
	• Have you scheduled a specific time to complete this week's work for this class? [If no] When will you complete this week's work for this class?	Starting at 1x/week
Checking gaps in understanding	• Which concepts from this class do you feel you mastered this week? Which concepts are you still struggling with?	Starting at 1x/week

Prompts: Metacognitive supports (cont.)

	Exam wrappers & letter to a future student	Timing
Academic behaviors	• Pre-exam survey administered before the test, designed to ask students about their planning for exam. • Post-exam self-evaluation after students have received graded assignment, designed to ask students to self reflect about exam.	Before and after major exam
Consolidating lessons learned	• The letter to a future student prompts students to describe all that they did to manage their learning and maintain their sense of belonging and self-efficacy.	End of course

Student-peer interaction and networking (SPIN)



Introductory survey that instructors use to create an activity around students' shared nonacademic interests

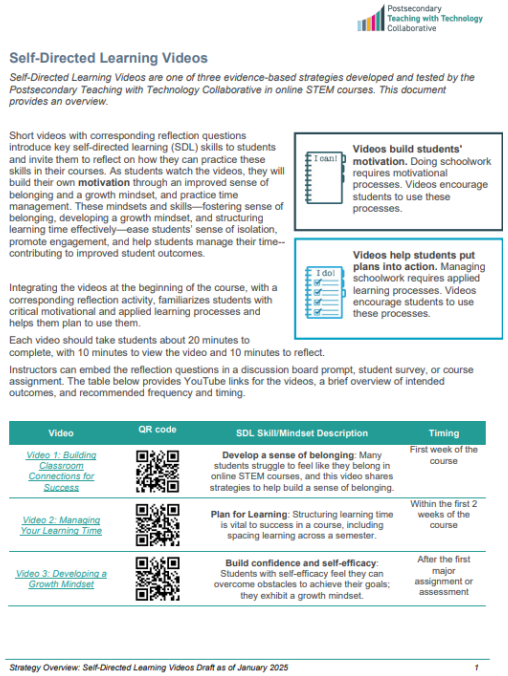
Group-work activity facilitated by instructors

Class discussions for students to share concepts they understood or struggled with and resources

Resources and guidance

Visit the event page for today's webinar to access draft versions of the instructional strategies and implementation guidance.

Videos



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Self-Directed Learning Videos

Self-Directed Learning Videos are one of three evidence-based strategies developed and tested by the Postsecondary Teaching with Technology Collaborative in online STEM courses. This document provides an overview.

Short videos with corresponding reflection questions introduce key self-directed learning (SDL) skills to students and invite them to reflect on how they can practice these skills in their courses. As students watch the videos, they will build their own **motivation** through an improved sense of belonging and a growth mindset, and practice time management. These mindsets and skills—fostering sense of belonging, developing a growth mindset, and structuring learning time effectively—ease students' sense of isolation, promote engagement, and help students manage their time--contributing to improved student outcomes.

Videos build students' motivation. Doing schoolwork requires motivational processes. Videos encourage students to use these processes.

Videos help students put plans into action. Managing schoolwork requires applied learning processes. Videos encourage students to use these processes.

Integrating the videos at the beginning of the course, with a corresponding reflection activity, familiarizes students with critical motivational and applied learning processes and helps them plan to use them.

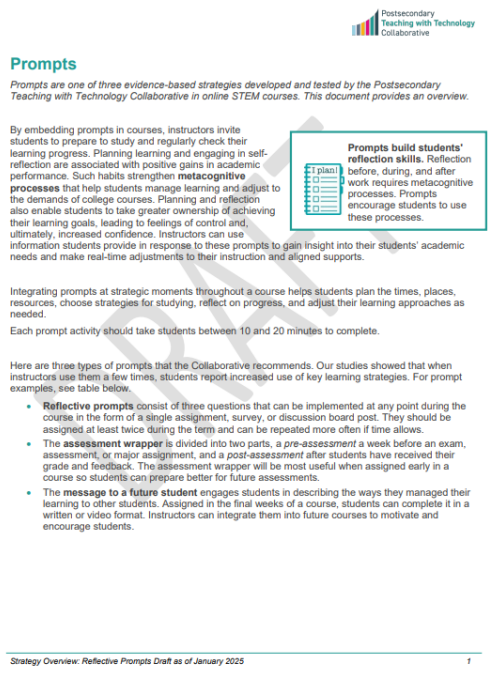
Each video should take students about 20 minutes to complete, with 10 minutes to view the video and 10 minutes to reflect.

Instructors can embed the reflection questions in a discussion board prompt, student survey, or course assignment. The table below provides YouTube links for the videos, a brief overview of intended outcomes, and recommended frequency and timing.

Video	QR code	SDL Skill/Mindset Description	Timing
Video 1: Building Classroom Connections for Success		**Develop a sense of belonging**: Many students struggle to feel like they belong in online STEM courses, and this video shares strategies to help build a sense of belonging.	First week of the course
Video 2: Managing Your Learning Time		**Plan for Learning**: Structuring learning time is vital to success in a course, including spacing learning across a semester.	Within the first 2 weeks of the course
Video 3: Developing a Growth Mindset		**Build confidence and self-efficacy**: Students with self-efficacy feel they can overcome obstacles to achieve their goals; they exhibit a growth mindset.	After the first major assignment or assessment

Strategy Overview: Self-Directed Learning Videos Draft as of January 2025 1

Prompts



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Prompts

Prompts are one of three evidence-based strategies developed and tested by the Postsecondary Teaching with Technology Collaborative in online STEM courses. This document provides an overview.

By embedding prompts in courses, instructors invite students to prepare to study and regularly check their learning progress. Planning learning and engaging in self-reflection are associated with positive gains in academic performance. Such habits strengthen **metacognitive processes** that help students manage learning and adjust to the demands of college courses. Planning and reflection also enable students to take greater ownership of achieving their learning goals, leading to feelings of control and, ultimately, increased confidence. Instructors can use information students provide in response to these prompts to gain insight into their students' academic needs and make real-time adjustments to their instruction and aligned supports.

Prompts build students' reflection skills. Reflection before, during, and after work requires metacognitive processes. Prompts encourage students to use these processes.

Integrating prompts at strategic moments throughout a course helps students plan the times, places, resources, choose strategies for studying, reflect on progress, and adjust their learning approaches as needed.

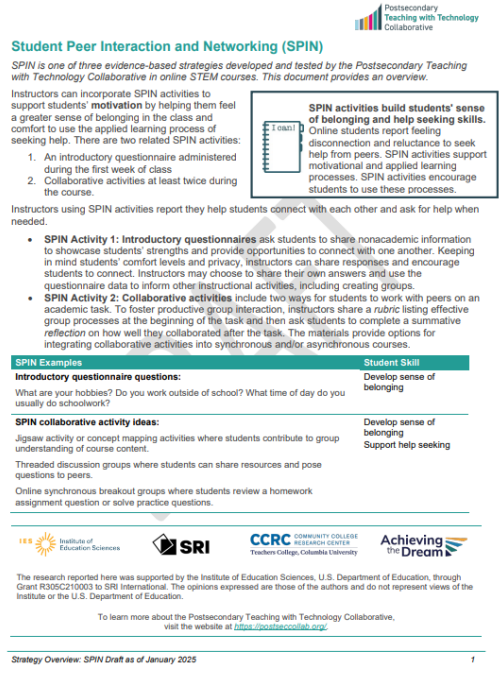
Each prompt activity should take students between 10 and 20 minutes to complete.

Here are three types of prompts that the Collaborative recommends. Our studies showed that when instructors use them a few times, students report increased use of key learning strategies. For prompt examples, see table below.

- **Reflective prompts** consist of three questions that can be implemented at any point during the course in the form of a single assignment, survey, or discussion board post. They should be assigned at least twice during the term and can be repeated more often if time allows.
- The **assessment wrapper** is divided into two parts, a *pre-assessment* a week before an exam, assessment, or major assignment, and a *post-assessment* after students have received their grade and feedback. The assessment wrapper will be most useful when assigned early in a course so students can prepare better for future assessments.
- The **message to a future student** engages students in describing the ways they managed their learning to other students. Assigned in the final weeks of a course, students can complete it in a written or video format. Instructors can integrate them into future courses to motivate and encourage students.

Strategy Overview: Reflective Prompts Draft as of January 2025 1

SPIN



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Student Peer Interaction and Networking (SPIN)

SPIN is one of three evidence-based strategies developed and tested by the Postsecondary Teaching with Technology Collaborative in online STEM courses. This document provides an overview.

Instructors can incorporate SPIN activities to support students' **motivation** by helping them feel a greater sense of belonging in the class and comfort to use the applied learning process of seeking help. There are two related SPIN activities:

1. An introductory questionnaire administered during the first week of class
2. Collaborative activities at least twice during the course.

SPIN activities build students' sense of belonging and help seeking skills. Online students report feeling disconnection and reluctance to seek help from peers. SPIN activities support motivational and applied learning processes. SPIN activities encourage students to use these processes.

Instructors using SPIN activities report they help students connect with each other and ask for help when needed.

- **SPIN Activity 1: Introductory questionnaires** ask students to share nonacademic information to showcase students' strengths and provide opportunities to connect with one another. Keeping in mind students' comfort levels and privacy, instructors can share responses and encourage students to connect. Instructors may choose to share their own answers and use the questionnaire data to inform other instructional activities, including creating groups.
- **SPIN Activity 2: Collaborative activities** include two ways for students to work with peers on an academic task. To foster productive group interaction, instructors share a *rubric* listing effective group processes at the beginning of the task and then ask students to complete a summative *reflection* on how well they collaborated after the task. The materials provide options for integrating collaborative activities into synchronous and/or asynchronous courses.

SPIN Examples	Student Skill
Introductory questionnaire questions: What are your hobbies? Do you work outside of school? What time of day do you usually do schoolwork?	Develop sense of belonging
SPIN collaborative activity ideas: Jigsaw activity or concept mapping activities where students contribute to group understanding of course content. Threaded discussion groups where students can share resources and pose questions to peers. Online synchronous breakout groups where students review a homework assignment question or solve practice questions.	Develop sense of belonging Support help seeking

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.

To learn more about the Postsecondary Teaching with Technology Collaborative, visit the website at https://postseccollab.org/.

Strategy Overview: SPIN Draft as of January 2025 1

Questions or comments to share?

Please enter any comments you would like to share or questions you have for the presenters in the chat now.

Panel Discussion

Supporting Student Success in Online Courses

Postsecondary Teaching with Technology Collaborative

Panelists

Candace Walker
Associate Professor
Palm Beach State College

Mason Gallagher
Sophomore
Wake Technical Community College

Emily Vershay
Sophomore
Wake Technical Community College

Reflections and Next Steps

Next Steps for the Collaborative

- Collecting and analyzing data from the pilot on usability, feasibility, and promise for improving student outcomes
- Refining the instructional strategies and integrating them into a comprehensive set of resources to support implementation
- Disseminating our final Instructional Model

Request today's presentation materials

Sign up for the Collaborative Newsletter

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Thank you!

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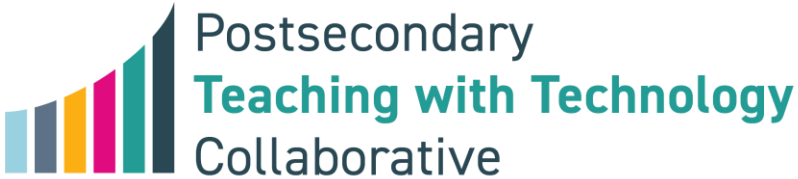

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