

Self-Directed Learning Instructional Model

Course Implementation Guide



Created by:
Postsecondary
Teaching with Technology
Collaborative

Acknowledgements

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Welcome to the Self-Directed Learning Instructional Model!

This **Course Implementation Guide** includes detailed instructions for faculty to integrate the Self-Directed Learning (SDL) Instructional Model into online courses. To help college students manage their online learning, the Instructional Model offers college educators three evidence-based strategies to integrate into their courses. These strategies help students cultivate habits that contribute to success:

 SDL Videos	 SDL Prompts	 SPIN
Motivation, metacognition	Metacognition, applied learning	Motivation, applied learning
Three short videos to boost sense of belonging, time management skills, and confidence through a growth mindset	Questions to promote reflection, task-planning, progress-monitoring, and help-seeking	Introductory questionnaire and collaborative activities to foster belonging and promote help-seeking

What's Inside?

Self-Directed Learning Instructional Model: An Overview: Learn about the Instructional Model and why SDL skills and mindsets are critical to student success.

How to Implement the Instructional Model: Find information about when to implement each strategy and how to measure if they are working.

Deep Dive into the Three Strategies: Explore what each strategy is, how to implement it and use the information gathered, and possible adaptations and customizations.

SDL Videos

SDL Prompts

Student-Peer Interaction and Network (SPIN)

Appendices: Find an SDL Activity Implementation Planner to plan for the delivery of strategies in a course. Review additional resources to support strategy implementation.



Self-Directed Learning Instructional Model: An Overview



Self-Directed Learning Instructional Model: An Overview

Online courses increase students' access to postsecondary education, but they also present challenges for learning and success. Online courses can be isolating, and it can be challenging to form connections with faculty and peers. They also require students to manage their learning more actively and independently than face-to-face courses. For instructors, it can be hard to know the best ways to help students be successful, and busy students may not be open to trying new strategies.



In a seated class, if I use language that students aren't familiar with, I can see the look on their face, I can see that, "Hey, they didn't understand." But in an online class, I don't have those visual cues.

– Online STEM instructor

To help faculty create effective online learning environments, the Postsecondary Teaching with Technology Collaborative's Self-Directed Learning (SDL) Instructional Model aims to help college instructors support online students to manage their learning, connect with classmates, and feel more resilient in the face of difficulties.

The SDL Instructional Model was co-developed with faculty and administrators and piloted in online STEM courses at five community colleges and broad-access universities. The Instructional Model features a set of three interconnected strategies to intentionally build and reinforce student learning skills and mindsets within a content area course.

Explore more!

Check out the video [How Students Experience Self-Directed Learning Strategies in Online Courses](#), where students share how and why the strategies have helped them in online courses. Instructors can share the video with students to help convey the value of the SDL Instructional Model.





The strategies helped foster critical skills such as goal-setting, time management, and self-assessment. For many students, it provided a new way to approach learning that goes beyond traditional teacher-led instruction. While not all students fully embraced the autonomy, the exposure to SDL is likely to have long-term benefits, especially in promoting independent thinking and lifelong learning habits.

– Online STEM instructor

These strategies are easy to integrate into a learning management system and are intended to be a light lift for both faculty and students, with most activities taking students about 20 minutes to complete. By implementing multiple strategies throughout a course, faculty will reinforce the key skills and mindsets that promote student success. The Instructional Model is intended to be customizable so that faculty can select the strategy activities that meet their students' needs and adapt the timing and implementation approach to fit their course context.



Three short SDL videos with corresponding reflection questions introduce sense of belonging, time management, and growth mindset and invite students to reflect on how they can practice these skills in their course.



The SDL prompts package includes several brief reflective questions that invite students to plan the times, places, resources, and strategies for studying and adjust their learning approaches as needed.



Student-peer interaction and networking (SPIN) consists of a brief introductory questionnaire administered during the first week of class and two content-based collaborative activities paired with the SPIN Collaborative Reflection Tool.

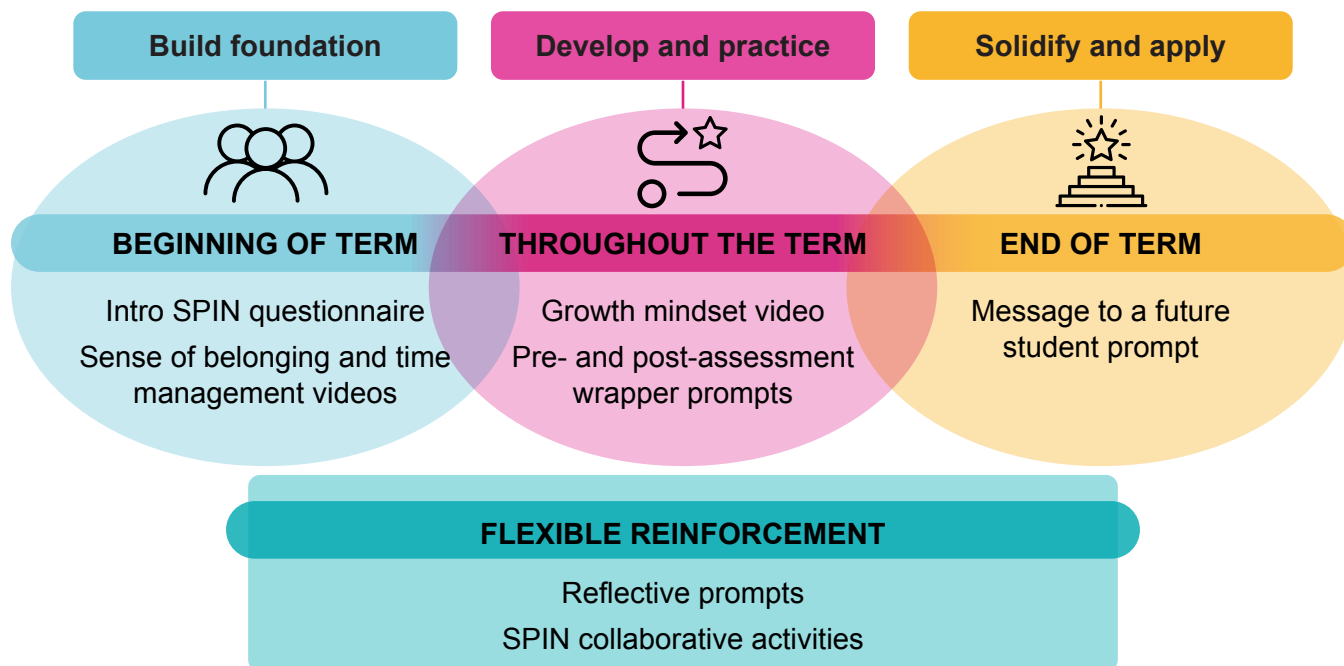
Explore more!



To encourage institution-wide use of the SDL Model, view the [Campus Resource Guide](#) for practical tips for college leaders and staff to help faculty adopt the Self-Directed Learning Instructional Model. Inside you'll find materials for institutional and instructional leaders, including deans, professional development providers, instructional designers, and others who set the vision for instructional excellence at the college or university.

SDL Strategies Throughout the Term

This visual provides a high-level timeline of when each strategy supports student success.



How Does the Instructional Model Work?

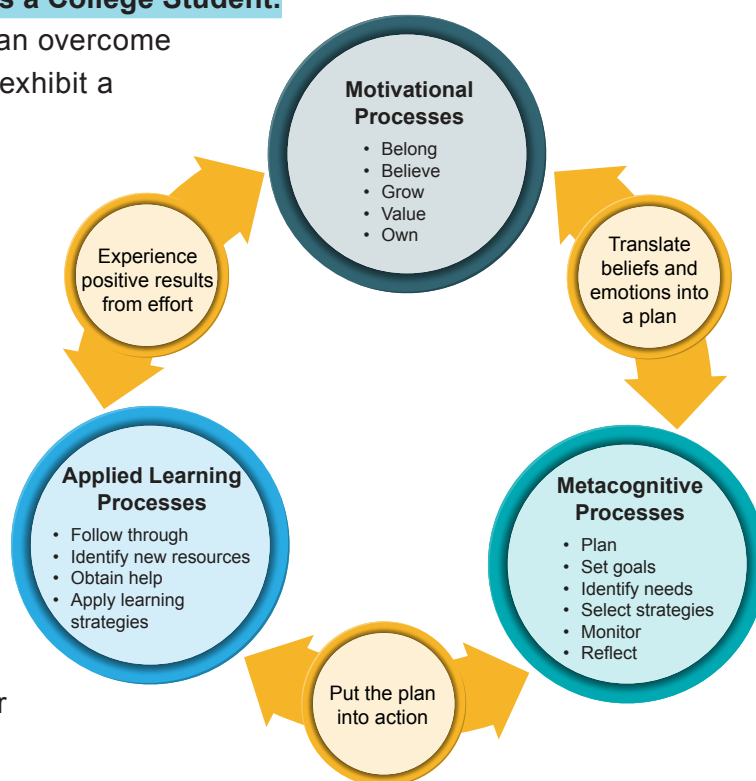
The Instructional Model draws on a research-based SDL framework that consists of three mutually reinforcing processes that promote student success: motivation, metacognition, and applied learning. The framework begins with students' initial motivational mindsets, which shape their commitment to learning. That commitment then drives their metacognitive processes to plan, monitor, adjust, and reflect on their learning. Those metacognitive processes provide the structure and support for a series of applied learning activities that students can use to adaptively manage their learning. The resulting experience of academic success feeds positive emotions and refuels motivation, which starts the SDL cycle anew. The model's evidence-based instructional strategies focus primarily on five outcomes aligned with the three processes important for learning and success in online courses:

Motivation

- ➡ **Develop a Sense of Belonging:** Students who experience belonging in a course feel connected to peers and faculty and feel accepted, respected, and valued.
- ➡ **Build Confidence and Self-Efficacy as a College Student:** Students with self-efficacy feel they can overcome obstacles to achieve their goals; they exhibit a growth mindset.

Metacognition

- ➡ **Plan for Learning:** Students with planning skills anticipate the learning strategies they will need to meet their goals; they can estimate the time needed for tasks and lay out steps to meet deadlines.
- ➡ **Engage in Regular Self-Reflection Around Learning Progress:** Students assess what worked and what did not after completing a task and use this information to adjust their plans for future assignments.



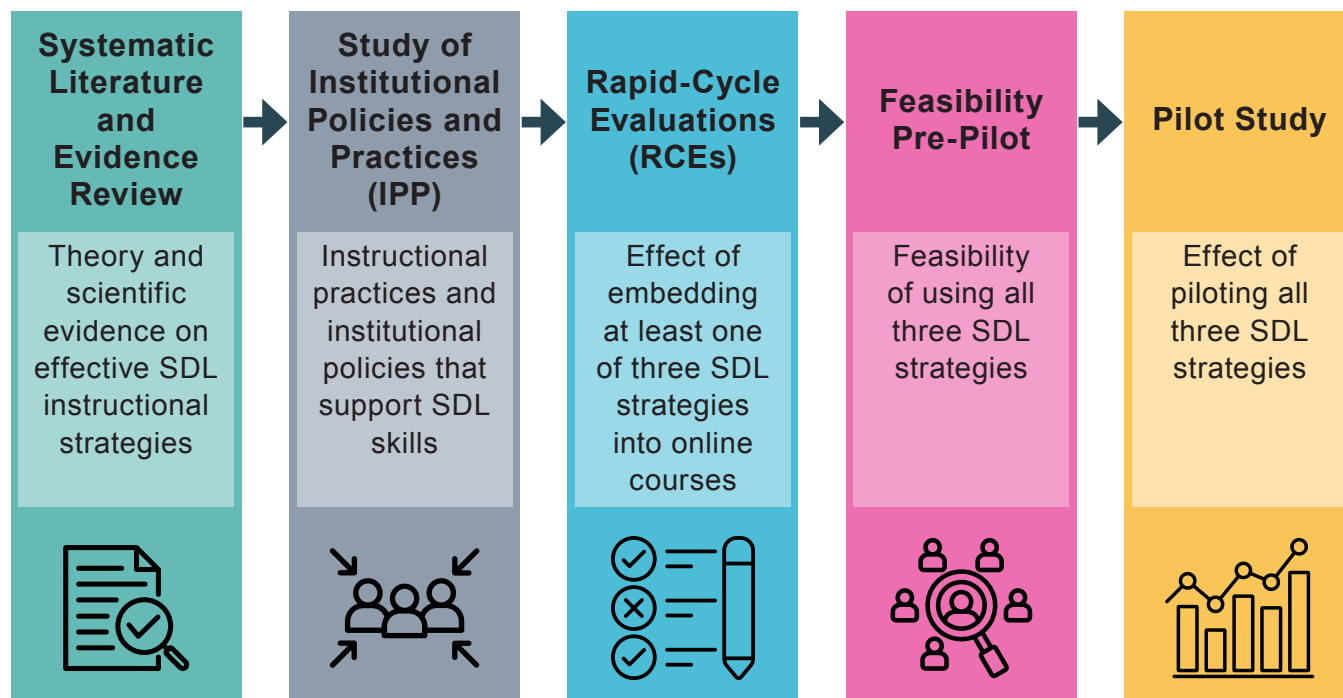
Applied Learning

- ➡ **Seek Help, Find Resources, and Implement and Adjust Strategies:** Students are able to take action when a learning problem requires additional resources, social support, or different study strategies.



What Is the Research Behind the Instructional Model?

The Collaborative conducted five phases of research to deepen understanding of how SDL strategies can support college students' achievement in online STEM courses.



Key findings across these research phases indicate that the SDL Instructional Model:

- ➡ Draws on a systematic literature review of effective SDL interventions which were then adapted for online courses.
- ➡ Is feasible, free, and ready to use in authentic course contexts.
- ➡ Engaged most students in the activities. Students who did not complete the activities tended to be disengaged with the course content generally or used the SDL strategies selectively based on their needs or time constraints.
- ➡ Has value to instructors and students with nine in 10 pilot instructors indicating the SDL strategies were valuable, and 7 in 10 pilot students reporting they were useful and worth their time.
- ➡ Demonstrates evidence of improving SDL skills, with students in early study activities showing an increase in metacognition and applied learning strategies.
- ➡ Indicates likely improvement of end-of-course grades. Rigorous analyses that draw on the broader evidence base for postsecondary interventions indicated a 78% probability (RCEs) and 67% probability (pilot study) that the strategies had a positive effect on grades.
- ➡ May offer particular benefits to first-generation students, female students, and students earlier in their college career.

The SDL Instructional Model serves as a worthy vehicle for continued learning about approaches to improve students' self-directed learning and success in online courses. Users are invited to explore how the Instructional Model can be best implemented in their context and consider refinements to meet their students' needs.

Explore more!

Explore our SDL framework and review of evidence-based SDL interventions, [Teaching and Designing Online STEM Courses to Support Self-Directed Learning Skills](#).

Find more information about the feasibility of implementing the SDL Instructional Model in our white paper, [Using Self-Directed Learning to Improve Online Learning](#).

Hear more about faculty and student experiences with the SDL Instructional Model in our webinar, [Supporting Student Success in Online Courses: Insights from Students and Faculty](#).

Explore more detailed findings from the RCEs in our paper, [Technology-Based Instructional Strategies Show Promise in Improving Self-Regulated Learning Skills at Broad-Access Postsecondary Institutions](#), and presentation, [Improving Student Success in Online Postsecondary STEM Courses through Technology-based Interventions](#).

Learn about students' patterns or profiles of SDL learning, [Self-directed Learning Profiles and the Influence of Technology-based Interventions among STEM Undergraduates](#).

Find more publications detailing findings from the pilot study on the [Collaborative's website](#).



Find more information on the science behind SDL in the [Campus Resource Guide](#).



How to Implement the Instructional Model



How to Implement the SDL Instructional Model

The Instructional Model is designed to build and reinforce students' SDL skills at key intervals throughout a course. The pacing guide below suggests when instructors can implement each SDL strategy and how long it will take students to use each one. Find an example implementation plan for a hypothetical course as well as a blank course planning template in [Appendix A](#).

Pacing Guide

Activity	SDL Strategy	Target SDL Skill	Course Pacing	Estimated Time for Students
Introductory Questionnaire	SPIN	Sense of belonging	First week	10 mins
Sense of Belonging	Videos	Sense of belonging	First week	20–30 mins
Time Management	Videos	Plan for learning	Within first 2 weeks	20–30 mins
Pre-Assessment	Prompts	Plan for learning	One week before first major assignment	10–20 mins
Growth Mindset	Videos	Confidence and self-efficacy	After first major assignment	20–30 mins
Post-Assessment	Prompts	Self-reflection	After first major assignment has been returned	10–20 mins
Reflective Prompts	Prompts	Self-reflection Seek help	At least twice	10–20 mins
Collaborative Activity	SPIN	Sense of belonging Seek help	At least twice	Varies
Message to a Future Student	Prompts	Self-reflection	Final weeks	20–30 mins



Integrating the Strategies

Instructors can integrate each SDL strategy using a variety of methods in a course learning management system (LMS) or other courseware:

- ➡ A discussion board
- ➡ A stand-alone assignment
- ➡ An extension or addition to an existing assignment.

The Instructional Model is intentionally designed to give instructors choices about the best ways to implement the strategies in their course. To incentivize participation, instructors can assign points, a grade, or extra credit to the activities. Some considerations for deciding how to integrate the strategies into the course design include:

- ➡ Does the course have synchronous opportunities for students to interact with one another (i.e., live or virtual class sessions where students can talk or chat with one another)?
- ➡ When in the sequence of course assignments are students most likely to engage with the activities?
- ➡ Will students be able to go back and look at their SDL activities later in the course? Students may benefit from re-reviewing the reflections and plans they made as the course progresses.
- ➡ Should students see and respond to one another's SDL activity responses? Students may learn from each other's reflections, but private reflections may foster more complete and honest responses.

Integrating the Strategies: Do's and Don'ts

Here are some suggestions for integrating the strategies into your course to maximize student engagement with the activities.

✓ Do...	✗ Don't...
✓ Introduce the strategies early and say why they matter	✗ Frame the strategies as extra, ungraded work with no clear link to learning or course objectives
✓ Build the strategies into existing LMS activities (discussions, short assignments), so they feel like a natural part of the course rather than an add-on	✗ Require new tools for the strategies when the LMS can support the activities
✓ Schedule strategies and their activities around key course milestones	✗ Add too many new activities at once or during peak workload weeks
✓ Review student responses and share big-picture themes or noticings with the class	✗ Ignore valuable insights into student thought processes as shown by their reflection responses



Using the Information Received from the Strategies

Each strategy includes opportunities for student sharing and reflection. Instructors may use the information they learn from students' responses to inform their instruction and provide additional support. Below are some examples of supportive instructional approaches to reinforce SDL skills building:

- ➡ **Assign groups.** The introductory questionnaire and early video and prompt reflections provide information about students' interests, preferred working times, and academic or career goals, which instructors can use to group students for collaborative activities.
- ➡ **Align assignments to students' interests.** Instructors can adjust assignments based on indicated interests in the questionnaire—for example, providing more options aligned with students' majors or career interests.
- ➡ **Inform instruction.** Student responses may include reflections on which topics and concepts are most challenging, providing instructors with feedback on areas for clarification or additional explanation.
- ➡ **Provide individualized support.** Instructors can give specific guidance or resources based on student responses. For example, they may schedule office consultations, provide direct responses to homework questions, suggest tutoring services, or create customized practice exercises and content videos.
- ➡ **Monitor course engagement.** Student responses may offer insights into students' feelings and concerns about the course. Instructors can use this information to make adjustments or provide encouragement. Empathizing with students' challenges (e.g., simply telling students their concerns are being heard) may promote motivation.
- ➡ **Share a summary of responses.** Instructors can summarize a few key points from student responses and share them with the class anonymously. Doing so may foster a sense of belonging as students hear ideas similar to their own, and it may give them ideas for new learning strategies.

If instructors implement the strategies across multiple terms, they can use information from prior terms to provide preventative support. Instructors can send out these messages at key moments to address common challenges that came up in prior terms. The message content may, for example, remind students of the importance of SDL skills, encourage students to seek help if they need it, include a few effective learning strategies that prior students used, or express the instructor's confidence that students can be successful in the course.

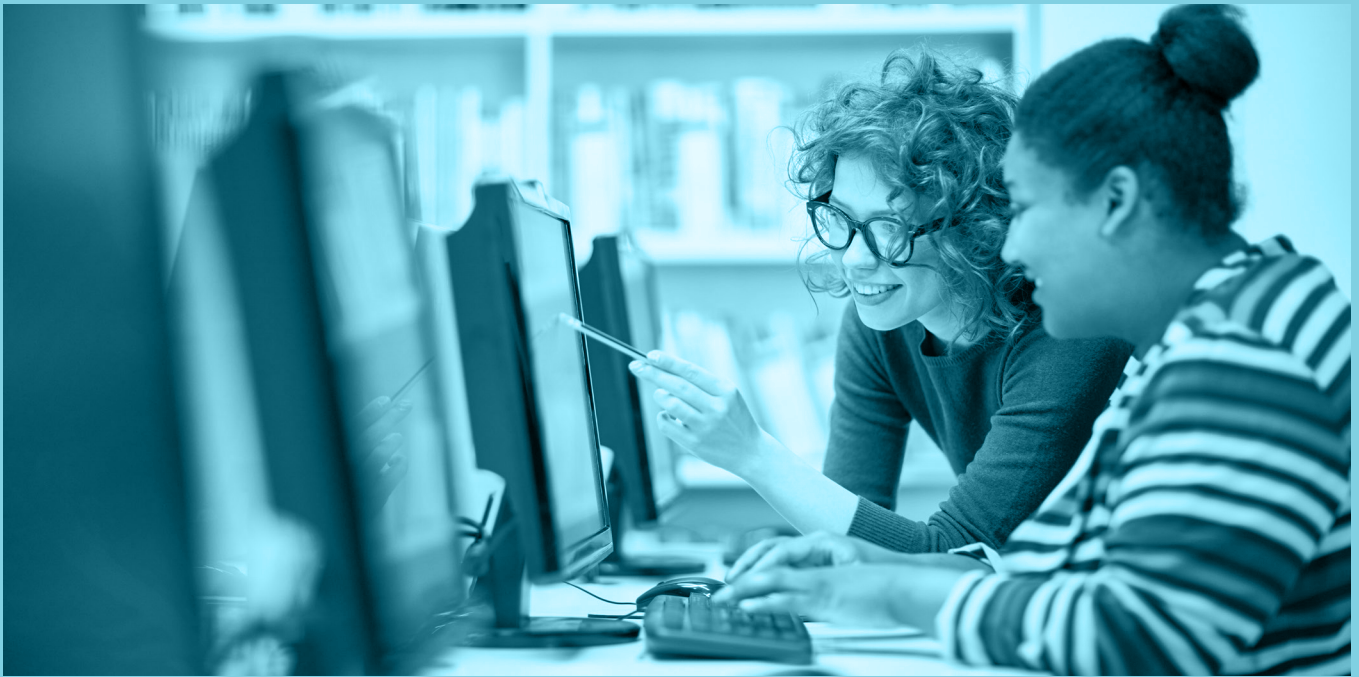
Measuring Whether the Strategies Are Working

Several indicators will suggest if the activities are working as intended or if they may need to be adapted or adjusted to meet students' needs. These indicators include:

- ➡ **Student Engagement:** Instructors can measure several dimensions of student engagement over a term, including:
 - More students complete activities, and the quality of their responses improves.
 - More students engage in other course activities such as discussion boards and review sessions.
 - Students reach out for help more effectively (e.g., asking targeted questions to build off their effort, soliciting specific feedback).
- ➡ **Rates of Assignment Completion:** More course content assignments are turned in on time, and students request extensions less often.
- ➡ **Student Withdrawal Rates:** Fewer students withdraw from a class after the add/drop period.
- ➡ **Grades:** Student performance improves on course assessments as well as overall.
- ➡ **Student Opinions:** Students report they found the activities valuable, such as in an end-of-course survey.

To put the above indicators in context, instructors may compare information across sections that are using the activities and those that are not.





Deep Dive into the Three Strategies





SDL Videos

Overview

Students often come to online courses thinking they need to learn on their own and they can spend less time studying than in face-to-face courses. Some may come with self-doubt based on negative prior experiences. The three short SDL videos with corresponding reflection questions introduce key SDL skills and invite students to reflect on how they can practice these skills in their course.

Instructors should show the SDL videos toward the beginning of a course, with a corresponding reflection activity. By engaging in these videos early in the course, students can apply what they learn throughout the course. Each video activity should take students about 20 minutes to complete: 10 minutes to view the video and 10 minutes to reflect.



I was inspired by one of the videos to start [a WhatsApp group]. We had one discussion that was particularly difficult about DNA and mRNA; we were all a little bit confused about what was going on, so we collaborated together, and somebody was able to find a website that helped with that discussion.

– Student

How to Use Videos in Teaching

The table below provides YouTube links for the three 10-minute videos, a brief overview of the intended outcomes, and suggested timing. See the [Ready-to-Use Text](#) section for the complete text of the reflection questions. The complete video transcripts can be found in [Appendix B](#). Each video begins by reviewing the objectives of the video. Next, it defines the SDL skill or mindset that is the focus of the video. The video then shares concrete strategies to develop that skill and closes by introducing the reflection activity.

Explore more!

Check out the video [The Student Perspective on SDL Videos](#), where a student shares their experiences with the SDL videos. Instructors can share the video with students to help convey the value of the strategy.



Activity	Target SDL Skill	Course Pacing	Estimated Time for Students
Sense of Belonging video	Sense of belonging	First week	20–30 mins
Time Management video	Plan for learning	Within the first 2 weeks	20–30 mins
Growth Mindset video	Confidence and self-efficacy	After the first major assignment	20–30 mins

Best Practices to Support Engagement

- ➡ **Describe the purpose of the videos and the way they will benefit students in the course.** Doing so will help students understand their value. The next section includes recommended instructions for students. Instructors can customize these instructions with a statement of their value for the specific course.
- ➡ **Show students that the videos are important by incentivizing their completion.** For example, instructors can assign points, a grade, or extra credit based on completion, effort, and/or responsiveness to the reflection questions.

Ready-to-Use Text

This section includes the instructions for students and content to cut and paste into a course. See [Appendix B](#) for the video transcripts.

Building Classroom Connections for Success (Video 1) Instructions

Sometimes, it is difficult to stay motivated in an online course because some of us (instructors included) miss the opportunity to connect with each other in person. This may lead us to feel isolated and even to question whether we belong in a class like this. [Here is a brief video](#) on how to help increase your sense of belonging in this course. This ten-minute video describes how to promote your sense of belonging, presents student examples, and asks you to reflect on your own sense of belonging and how to implement the strategies to strengthen it.

1. For each of the following statements, rate yourself from a score of 5, meaning you strongly agree, to a score of 1, meaning you strongly disagree.
 - a. It's personally important to me to pass this class.
 - b. I feel highly confident that I can succeed in this class.
 - c. I feel I belong in the class.
 - d. I can succeed in this class based on my hard work.
2. Student story 1 reflection: What did you learn from this student's experience? What does hearing this make you feel? (2–3 sentences)
3. Student story 2 reflection: What strategies did this student use to feel more connected? Have you used a similar strategy before? (2–3 sentences)
4. Please reflect on a time when you had an experience of feeling like you did not belong in a course. How did you handle it? What might you have done differently? (3–4 sentences)
5. 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: Which students will you reach out to? How and when can you contact/meet with your instructor? (3–4 sentences)



Managing Your Learning Time (Video 2) Instructions

We're all busy, and many students have jobs, families, and other commitments that make it challenging to find time for learning. Planning learning time over the course of a day and a week is vital to success in a course. [Here is a video](#) on how to strengthen your skills to effectively manage and structure your learning time. This ten-minute video describes how to manage your time, presents student illustrations, and asks you to reflect on your own time management skill and how to implement the strategies to strengthen it.

1. For each of the following statements, rate yourself from a score of 5, meaning you always do it, to a score of 1, meaning you never do it.
 - a. I read the syllabus at the beginning of the course to know when my major commitments will be.
 - b. I create a plan to study content.
 - c. I know when I am on track to meet my learning goals.
 - d. I seek help when I am confused.
2. Student story 1 reflection: What was the difference in how these two students approached learning the material? Which do you think was more effective? Why? (2–3 sentences)
3. Student story 2 reflection: How did this student structure their learning time? What strategies did they use?
4. 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: How will you space your learning? How will you structure a study session? (3–4 sentences)

Developing a Growth Mindset (Video 3) Instructions

Have you ever experienced a loss of confidence after a challenging experience at school or at work? Developing a growth mindset can help keep challenges in perspective and help you persist, even in the face of setbacks. The brain acts like a muscle in that it can grow with practice and effort. [Here is a brief video](#) on how you can increase your intelligence through effort. This ten-minute video describes how to develop a growth mindset, presents student illustrations, and asks you to reflect on your own growth mindset and how to implement the strategies to strengthen it.

1. For each of the following statements, rate yourself from a score of 5, meaning you strongly agree, to a score of 1, meaning you strongly disagree.
 - a. I like my work best when I can do it perfectly without any mistakes.
 - b. I like my work best when it makes me think hard.
 - c. I like my work best when I can do it really well without too much trouble.
 - d. When something is hard, it just makes me want to work more on it, not less.
 - e. To tell the truth, when I work hard, it makes me feel as though I'm not very smart.
 - f. I like work that I'll learn from even if I make a lot of mistakes.
2. Student story 1 reflection: How did this student reframe their thinking to be more positive? (2–3 sentences)
3. Think of some mistakes you have made that ultimately taught you how to improve your performance. What mistakes have you made in your current class that you might analyze more closely?
4. Student story 2 reflection: How did this student approach the challenge of her online statistics course? (2–3 sentences)
5. Reflect on a time when you overcame a struggle to learn something. Reflect on the times when you failed at first, but through perseverance your brain became stronger and you eventually became better at the task at hand? (3–4 sentences)
6. Which of these tips are you most excited to try out? Which do you think will be most effective and why? (3–4 sentences)



SDL Prompts

Overview

Students may enroll in online courses because they believe online learning is faster and easier. But in reality, online learning requires more independent planning and reflection to guide their learning. Prompts invite students to prepare to study and regularly check their learning progress. Instructors can use the SDL prompts to gain insight into their students' academic needs and make real-time adjustments to their instruction and aligned supports.

Integrating prompts at strategic moments throughout the course will help students plan the times, places, resources, and strategies for studying and adjust their learning approaches as needed. The prompts package includes three activities that should take students between 10 and 20 minutes to complete.



I think the prompts are nice because you are able to look back on if your study techniques gave you the goals that you want. You can also examine tips from fellow classmates and see if they have an idea that you haven't thought of or if they had a different technique that allows them to get a good grade.

– Student

Explore more!

See a student's reflection on their experiences with the SDL prompts in the video [The Student Perspective on SDL Prompts](#). Instructors can share the video with students help convey the value of the strategy.

How to Use Prompts in Teaching

The table below provides a brief overview of the three types of prompts and their frequency and timing in the course. See the [Ready-to-Use Text](#) section for the complete text of the prompts. Using multiple prompts and repeating prompts will strengthen and reinforce students' metacognitive and applied learning processes.

Activity	Target SDL Skill	Course Pacing	Estimated Time for Students
Reflective prompts consist of a set of three questions that can be assigned at any time during the course.	Self-reflection Seek help	Twice	10–20 minutes
The assessment wrapper consists of a two-part activity that should be assigned a week before a major assessment or assignment (pre-assessment) and after the student has received their grade (post-assessment).	Plan for learning Self-reflection	Once before and once after an assignment	30–40 minutes
The message to a future student invites students to reflect on their course performance and can be assigned as a written reflection or a video recording.	Self-reflection Confidence and self-efficacy	Final weeks	20–30 mins

Best Practices to Support Engagement

- ➔ **Be strategic with the timing of the prompts in the course.** Instructors can assign them at points when students need them most, without overloading them at busy times during the semester.
- ➔ **Be flexible.** Encourage students to respond in a way that encourages their participation, such as through a short video, on slides, or in writing.
- ➔ **Allow students to learn from one another.** Consider using a discussion board forum for the prompts so that students can see others' strategies as well as their struggles to help them connect.
- ➔ **For the assessment wrapper, make sure students can access their “pre-assessment” response** when they are completing the “post-assessment” response (keep the assignment or discussion board available).
- ➔ **Use clear, concise instructions to describe the purpose and benefits of the prompts.** Doing so will help students understand how the reflection will help them build habits for successful studying. Consider adding objectives for the activity and a short example that you create. (See the next section for recommended instructions for students.)
- ➔ **Show students that prompts are important by incentivizing their completion.** For example, instructors can assign points, a grade, or extra credit based on completion, effort, and/or responsiveness to the reflection questions.



Ready-to-Use Text

This section includes the instructions for students and content to cut and paste into a course.

Reflective Prompt Instructions

As your instructor, I want you to get the most out of your learning experience in this course. To help with this, we will use reflection activities designed to help you plan for studying and coursework and think about your progress so you can make adjustments. These habits are some of the skills that successful students use. There are no right or wrong answers to these questions, so take your time and consider what you need to succeed in this course this week. Respond to prompt with 2–3 sentences.

- 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?
- Have you scheduled a specific time to complete this week's work for this class? [If "no"] Think about other responsibilities such as work and family, and when you will make time to complete this week's work?
- Which concepts from this class do you feel you mastered this week? Which concepts are you still struggling with? How will you get help to understand these topics?
- Is there anything specific that I, as your professor, can help you with?

Assessment Wrapper Instructions

Pre-assessment: This activity is designed to help you prepare for the upcoming assessment. This week, you will describe your preparation plans. I expect that each of you will do your best, so think about how you can plan your time and study approach, and how you can get any help you may need. After the assessment, you will evaluate your preparation and performance, which will help you think about whether and how you can adjust your study habits in the future. Your responses will not affect your grade on the assessment and are solely to help you improve. Be honest with yourself so you can understand more about how you learn best.

1. When and for how long do you plan to spend preparing for the [assessment or assignment]? (1–2 sentences, include which days and time blocks)
2. How do you plan to prepare for this [assessment or exam]? (Select all that apply) **[Note to Instructors: Customize this list to apply to your discipline and assessment type.]**
 - a. Completing online practice quizzes
 - b. Attending office hours with my instructor
 - c. Meeting with a tutor
 - d. Reviewing PowerPoint presentations and/or lecture notes



- e. Participating in a study group with classmates
- f. Re-reading or highlighting textbook section(s)
- g. Re-reading my class notes
- h. Reading/studying other materials
- i. Rewriting key concepts into my own words
- j. Self-testing (or working on extra problems)
- k. Relating material to things I already know
- l. Memorizing/using flashcards
- m. Reviewing homework solutions
- n. Solving new harder problems for practice
- o. Other (please describe: _____)

3. Are there specific things you find particularly challenging that you need help with?
4. What challenges or barriers do you anticipate you might encounter preparing for the assessment, and how might you overcome them? Is there anything specific that I can do as your instructor to help you? (1–2 sentences)



Post-assessment: To complete this reflection, look back at your responses to the pre-assessment reflection and then review your score and feedback on the assessment. Thinking about your performance and how you prepared, what worked well, and what you might want to do differently? This will help you understand how you can adjust your study habits in the future. Be honest with yourself about your strengths and weaknesses so you can make a plan for continued improvement for next time! Respond to the following reflection questions in a few sentences each.

1. Review your pre-assessment reflection. Did you stick to the plan that you made for yourself?
2. What preparation strategies worked? What challenges did you encounter when preparing?
3. Looking at the feedback you received on the assessment, what are your areas for growth or development?
4. Could any of the following have contributed to your performance? (Select all that apply) **[Note to Instructors: Customize this list to apply to your discipline and assessment type.]**
 - a. Trouble understanding a concept (or list specific concepts)
 - b. Trouble remembering formulas/structures
 - c. Trouble with definitions
 - d. Not concentrating/focused enough
 - e. Not being able to formulate an approach to the problems
 - f. Arithmetic/grammatical errors
5. What did you find challenging in the assessment?



6. What other things may have affected your performance? (For example, not enough sleep, hunger, school not a top priority today, distracted by other things in my life, not feeling comfortable to ask for an extension or for help with things I didn't understand, competing priorities from another course.) Is that likely to happen again? How could you adjust for that?
7. How did your actual grade compare with the grade you expected? How do you explain the difference, if any?
8. If you didn't do as well as you hoped, do you need more information/feedback from the instructor about the points on the rubric that you achieved or did not?
9. Based on what you learned from this assessment, name at least two things you will do to prepare for the next assessment. Be specific. For example, will you spend more time, start your preparation earlier, change a specific study habit, try a new one (if so, try to name it), sharpen some other skill (if so, name it), participate in more review opportunities, or do something else?

Message to a Future Student Instructions

Now that we are nearing the end of the course, reflect on what you have learned about your own learning this term. Think about any challenges you may have faced and how you overcame them. What have you learned to do differently? What have you learned that you will take with you to future courses? Compose your reflection in the form of a brief letter [or record a brief video] telling your story to a future student in the course. **[Note to Instructors: If you are planning to use selected letters or excerpts of letters in future courses, explain this to students along with protections for confidentiality.]** Use the following questions as a guide:

1. What do you wish you knew going into this course?
2. What challenges did you face this term and how did you overcome them?
3. How did you approach studying for this class? Did you have to make adjustments to find a more effective approach? If so, what did you do and how do you feel about having to pivot your approach?
4. Were there approaches you used in the past that you found did not work for you anymore?
5. What did you learn about yourself as a learner?
6. Did you do as well as you hoped to in this course?



Student-Peer Interaction and Networking (SPIN)

Overview

Connecting with other students in online classes can be a challenge. Instructors can make it easier by integrating the SPIN strategy, which aims to build students' capacity to proactively establish social contact and complete work with the support of peers. These skills can lead to a greater sense of belonging in the class and more comfort seeking help from peers. Instructors can integrate SPIN activities as follows:

1. An introductory questionnaire administered during the first week of class; responses then shared with the class.
2. Collaborative activities assigned at least twice during the course, using a SPIN Collaborative Reflection Tool that includes tips on how to work effectively as a group. Incorporating this activity could be as simple as embedding the tool into preexisting group activities.



I was more intentional this semester [than I would have been without SPIN]. I talked with students after the questionnaire to try to find some common ground.

– Online instructor

Explore more!

See a student's reflection on their experiences with SPIN in the video [The Student Perspective on SPIN Collaborative Activities](#). Instructors can share the video with students help convey the value of the strategy.

How to Use SPIN Activities in Teaching

The table below lists the two SPIN activities, a brief overview of intended outcomes, and suggested timing.

Activity	Target SDL Skill	Course Pacing	Estimated Time for Students
Introductory questionnaire	Sense of belonging	First week	10 minutes
Collaborative activities	Sense of belonging Seek help	At least twice	Varies



SPIN Introductory Questionnaire

The introductory questionnaire asks students to:

- ➡ Share nonacademic information to help them get to know one another better
- ➡ Find shared experiences and connections, and
- ➡ Promote a course atmosphere where students can “bring their full selves” to class

Instructors can find a suggested bank of questions in the [Ready-to-Use Text](#) section below. Instructors may customize the questionnaire to include questions that showcase students’ strengths and interests, while taking care to avoid questions of a confidential nature.

To build an online course community, instructors should arrange for students to see one another’s responses, such as through a video or post in a discussion forum. If instructors prefer to have students submit responses through a form or assignment, they can share a summary of responses. They can also share their own answers!

SPIN Collaborative Activities

SPIN offers ideas for online collaborative activities and a tool with tips to improve collaboration.

- ➡ To build community through group work, instructors can use responses from the introductory questionnaire to form groups of students with common interests and shared availability (for hybrid courses) or preferred worktime (in asynchronous courses).
- ➡ To help instructors create new collaborative activities, see [Appendix D: SPIN Examples and Additional Guidance](#) for examples of group activities and assignments and best practices for collaboration in online courses.
- ➡ Students should begin their collaborative work by reviewing the tool’s tips on how to work effectively as a group, and then close the group activity by having students reflect—either individually or as a group—on how their collaboration went and what they’d do differently next time. Find the tool below in the [Ready-to-Use Text](#) section, or alternative reflection tools in [Appendix D: SPIN Examples and Additional Guidance](#).
- ➡ Instructors can use existing collaborative activities in SPIN by adding the Collaborative Reflection tool and potentially refining their approach using the best practices listed below.

Best Practices for Collaborative Activities in Online Settings

In online courses, collaborative activities can be challenging to implement. Many online students may be reluctant to engage in real-time collaboration, be hesitant to connect with peers they do not know, or have concerns about scheduling time to complete collaborative assignments. To promote engagement and success with collaborative activities in online courses, consider these practices:

- ➡ Incentivize participation with a grade or extra credit.
- ➡ Group students intentionally so that they have some commonalities.
- ➡ Explain the goals and purpose for the collaboration (e.g., to build collaborative skills, to share the burden of tackling a complex problem, or to have the opportunity to learn from peers).
- ➡ Design activities specifically for success in online settings, such as setting up groups in the LMS so that students can chat virtually, setting agreed-upon deadlines for submitting work and offering one another feedback.
- ➡ Assign activities with multiple components or dimensions so that each student can take on a clear role in the group.
- ➡ Share best practices for team meetings, such as assigning roles and making sure each person has a chance to contribute.
- ➡ Support relationship-building throughout the course so that students are more comfortable when collaborative activities are assigned.
- ➡ Provide ongoing support by checking in with groups via chat and encouraging good teamwork.

Find more detailed suggestions and additional resources in [Appendix D: SPIN Examples and Additional Guidance](#).

Ready-to-Use Text

This section includes the instructions for students and content to cut and paste into a course.

Introductory Questionnaire Instructions

Getting to know your classmates, even in online courses, can not only help you feel part of the course community, but also give you a valuable tool for success: collaboration.

This term, we will do various activities designed to help you get to know each other virtually.

This week, we will start with an introductory questionnaire to share a bit about yourself. **[Note to Instructors: If you prefer that students submit answers privately, add the text: I will summarize your answers and share them so you can see commonalities among your peers.]** Your responses will help you get to know your classmates, and they will also help me design course activities to account for your varied experiences. So please take the time to answer thoughtfully and to review your classmates' responses!

Questionnaire items may include:

- Fun:
 - What are your hobbies, pastimes, or activities that bring you the most joy?
 - What is your favorite type of food?
 - When was the last time you had a good belly laugh? What was it about?
 - What's something you did recently that you're particularly proud of?
 - What's a hidden talent or skill that you have that most people don't know about?
 - What's a regular tradition you have with your family, your friends, or yourself?
 - What's a movie, book, TV show, or other form of media you'd recommend to your peers?
- School:
 - How far away from campus do you live?
 - 0–5 miles
 - 5–10 miles
 - 10–15 miles
 - 15–20 miles
 - More than 20 miles
 - What time of day do you usually do schoolwork?
 - Are you employed?
 - Student only
 - Caregiver / homemaker
 - Employed part-time (less than 30 hours a week)
 - Employed full-time (more than 30 hours a week)



- What is your intended major or career path?
 - Chemistry or chemical engineering
 - Engineering
 - Biology
 - Medical field (doctor, PA, nurse)
 - Computer science
 - Math
 - Non-science path
 - Other (please specify: _____)
- Have you ever used any of the following resources? (Select all that apply)
 - Office hours
 - School tutoring like ILC
 - STEM Center
 - Private tutoring
- What resources do you find most helpful in courses when you find you are struggling?
- What advice do you have for other students taking an online science or math course?
- How do you prefer to communicate with your instructors?
 - Email
 - Text
 - Class discussion forums
 - Institutional chat platform (ex: MS Teams through your college account)
 - Other
- How do you prefer to communicate with other peers?
 - Email
 - Text
 - Class discussion forums
 - Institutional chat platform (ex: MS Teams through your college account)
 - Other



Collaborative Activity Instructions

Note to Instructors: In addition to the text below, also provide clear instructions for the collaborative activity, including how you will assign groups and expectations for success.

While it often feels more convenient to work alone, there are many benefits to working with others. Our peers and colleagues bring fresh ideas and can help complement our strengths and weaknesses. Divvying up a large task can improve efficiency. Working in groups, even in an online setting, is an important skill to master for many future job environments.

Before you begin, review the assignment and the SPIN Collaborative Reflection Tool with the members of your group. Discuss: Which collaborative skills will be most important to completing the assignment? Which skills do you anticipate being challenging to practice? What can we do as a team to help us be successful in meeting these expectations?

After your collaborative activity is finished, complete the SPIN Collaborative Reflection Tool to consider how well your team worked together and what you might do differently next time.

SPIN Collaborative Reflection Tool

	Things that went well (1–2 sentences)	Lessons learned for future collaboration (1–2 sentences)
1. Roles and Tasks: Our team worked collaboratively to assign roles and tasks for each member. Each team member understood their role and tasks.		
2. Time Management: Our team worked well to manage our time. We made a plan for how to complete the activity within the time allotted. We stuck to the plan, and if we couldn't, we communicated with one another to make adjustments.		
3. Respect and Inclusion: Team members listened to each other with respect. The team invited each member to offer their ideas; all ideas and perspectives were considered.		
4. Troubleshooting: If the team encountered challenges, we found effective ways to solve them (by brainstorming new approaches, listening to one another, and/or asking for help).		
5. Communication: Team members kept an open line of communication throughout the activity and communicated with one another in a timely fashion.		





Appendices

Course Implementation Guide

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Appendix A: SDL Activity Implementation Planner

Faculty can use this table to plan their implementation of the three strategies included in the Self-Directed Learning (SDL) Instructional Model. The first table is an example of how to fill out the plan, and the second table is a blank template. While the pacing guide provides a suggested cadence for implementation, faculty can choose how and when to implement the strategies to best meet the needs of their students.

SDL Activity Implementation Plan: Example

Strategy: Activity	Implementation timing	Alignment with syllabus	Delivery method	Description and adaptations
<i>List the strategy and specific activity</i>	<i>Specify the week of the course and release date</i>	<i>Specify what unit and/or assignment</i>	<i>Specify how and where you will embed the activity in the course (e.g., discussion forum, survey)</i>	<i>Describe any planned adaptations from the Instructional Model. For SPIN 2, include the specific planned collaborative activities</i>
SPIN: Introductory Questionnaire	Week 1: January 7	Course launch	I will distribute the introductory questionnaire as a survey assignment. I will share summary tables of student responses in class.	I will prioritize fun questions as well as questions around preferred modes, methods, and timing of communication. I will set up a required discussion board post to have students reflect on what they learned.
SDL Videos: Sense of Belonging	Week 1: January 7	Course launch	I am going to use our LMS to create an embedded page to share the video links from YouTube. I will include the introductory text at the top of the page and then include the link to the video right below it. The reflection questions will be an assignment for extra credit.	In the reflection assignment, I will include the following help-seeking options: • Attending office hours • Visiting the STEM Center • Visiting the Science Resource Center • Individualized Learning Center tutoring • Forming a student study group

Strategy: Activity	Implementation timing	Alignment with syllabus	Delivery method	Description and adaptations
<i>List the strategy and specific activity</i>	<i>Specify the week of the course and release date</i>	<i>Specify what unit and/or assignment</i>	<i>Specify how and where you will embed the activity in the course (e.g., discussion forum, survey)</i>	<i>Describe any planned adaptations from the Instructional Model. For SPIN 2, include the specific planned collaborative activities</i>
SDL Videos: Time Management	Week 2: January 14	Second week	I am going to use our LMS to create an embedded page to share the video links from YouTube. I will include the introductory text at the top of the page and then include the link to the video right below it. The reflection questions will be an assignment for extra credit.	No planned changes.
SDL Prompts: Reflective Prompts 1	Week 3: January 21	Launch of Unit 2	I am going to use our LMS student discussion board for the prompts.	No planned changes.
SDL Videos: Growth Mindset	Week 4: January 28	After first quiz in Unit 2	I am going to use our LMS to create an embedded page to share the video links from YouTube. I will include the introductory text at the top of the page and then include the link to the video right below it. The reflection questions will be an assignment for extra credit.	No planned changes.
SDL Prompts: Pre-Assessment Wrapper	Week 5: February 4	Week before midterm	I am going to use our LMS student survey feature for giving students the assessment wrappers.	I will adjust the options for how students plan to prepare to align with my course.
SDL Prompts: Post-Assessment Wrapper	Week 6: February 11	After graded midterm is returned	I am going to use our LMS student survey feature for giving students the assessment wrappers.	No planned changes.

Strategy: Activity	Implementation timing	Alignment with syllabus	Delivery method	Description and adaptations
<i>List the strategy and specific activity</i>	<i>Specify the week of the course and release date</i>	<i>Specify what unit and/or assignment</i>	<i>Specify how and where you will embed the activity in the course (e.g., discussion forum, survey)</i>	<i>Describe any planned adaptations from the Instructional Model. For SPIN 2, include the specific planned collaborative activities</i>
SPIN: Collaborative Activity 1	Week 8: February 25	Part of Unit 3	This will be a graded assignment that students can work on outside of class time. I will assign groups based on the introductory questionnaire responses regarding what time of day students usually like to do work.	I will do a group lab assignment to launch Unit 3, with clear expectations. After the lab, I will ask students to complete a team feedback form. I will aggregate the results and share lessons with the class via a discussion board, asking students to reply as they feel comfortable.
SDL Prompts: Reflective Prompts 2	Week 9: March 4	Launch of Unit 4	I am going to use our LMS student discussion board for giving students the prompts.	As this aligns with the launch of Unit 2, I will add a concept-specific prompt about Unit 1.
SPIN: Collaborative Activity 2	Week 12: March 25	Part of Unit 5; align concept-mapping activity with preparation for final exam	I will use small breakout rooms for this activity in a synchronous portion of my class.	I will do a concept-mapping activity to support students' preparation for the final exam. I will create a concept map summarizing information from across all five units and ask students to work in groups to identify any mistakes. We will share out as a class.
SDL Prompts: Message to a Future Student	Week 15: April 15	Last week of class before final	This will be a graded assignment.	No planned changes; depending on responses, it is possible I will use these messages in future classes.



SDL Activity Implementation Planner: Template

Strategy: Activity	Implementation timing	Alignment with syllabus	Delivery method	Description and adaptations
<i>List the strategy and specific activity</i>	<i>Specify the week of the course and release date</i>	<i>Specify what unit and/or assignment</i>	<i>Specify how and where you will embed the activity in the course (e.g., discussion forum, survey)</i>	<i>Describe any planned adaptations from the integrated model. For SPIN 2, include the specific planned collaborative activities</i>
SPIN: Introductory Questionnaire (Week 1)				
SDL Videos: Sense of Belonging (Week 1)				
SDL Videos: Time Management (within first two weeks)				
SDL Prompts: Reflective Prompt 1 (flexible)				
SDL Videos: Growth Mindset (after first major assessment)				

Strategy: Activity	Implementation timing	Alignment with syllabus	Delivery method	Description and adaptations
<i>List the strategy and specific activity</i>	<i>Specify the week of the course and release date</i>	<i>Specify what unit and/or assignment</i>	<i>Specify how and where you will embed the activity in the course (e.g., discussion forum, survey)</i>	<i>Describe any planned adaptations from the integrated model. For SPIN 2, include the specific planned collaborative activities</i>
SDL Prompts: Pre-Assessment Wrapper (one week before first major assessment)				
SDL Prompts: Post-Assessment Wrapper (one week after first major assessment)				
SPIN: Collaborative Activity 1 (flexible)				
SDL Prompts: Reflective Prompt 2 (flexible)				
SPIN: Collaborative Activity 2 (flexible)				
SDL Prompts: Message to a Future Student (final weeks of course)				



Appendix B: Video Transcripts

Video 1: Building Classroom Connections for Success

Sometimes, it is difficult to stay motivated in an online course because some of us (instructors included) miss the opportunity to connect with each other in person. This may lead us to feel isolated and even to question whether we belong in a class like this. Here is a brief video on how to help increase your sense of belonging in this course. This ten-minute video describes how to promote your sense of belonging, presents student illustrations, and asks you time for you to reflect on your own sense of belonging and how to implement the strategies to strengthen it. You can watch the video [Building Classroom Connections for Success](https://www.youtube.com/watch?v=21qlf1nE4rg) (opens in new window) directly.

Plain text: <https://www.youtube.com/watch?v=21qlf1nE4rg>

Transcript

Narrator: [00:00:06] Hello and welcome to the first module of a series of videos on self-directed learning, or how you manage your learning. This video will provide you concrete strategies and tips to improve your study skills. Consider the following story from a student struggling with online STEM courses.

Student 1: [00:00:24] When I enrolled in my first online college math course, I felt super isolated, like I didn't belong. I felt like I had to do all this studying and learning alone. I wasn't sure how to connect with my peers, and there were so many unknowns. If I could manage the material, if I would make friends, if it was the right class for me.

Narrator: [00:00:43] This reflection demonstrates a couple of key points. Online STEM college-level courses are challenging, and you may feel isolated like you do not belong in a class, or you may lack confidence in your ability to achieve success. You may feel like asking for help will tell others you're not supposed to be here. Know that you are not alone in feeling this and it is completely normal to struggle and feel alone in online courses. Many students feel this way. However, making a few changes can make a big difference in how you manage your learning and help you do better in your course. We offer a series of short videos to provide you with these strategies. This first module supports your sense of belonging in a course. This video gives you tips on reflecting on your own feelings about a course; connecting with others who are taking the course with you to ease your feelings of isolation; and finding resources when you need help. The first step towards developing strategies to better manage your learning is reflecting on your own feelings in the course. Whether or not you feel like you belong and whether you feel like you are part of a community can directly drive or undermine your success in a course. Let's consider your current course. For each of the following statements, rate yourself from a score of five, meaning

you strongly agree, to a score of one, meaning you strongly disagree. It's personally important to me to pass this class. I feel highly confident that I can succeed academically in this class. I feel I belong in this class. I can succeed in this class based on my own hard work. Knowing where you stand on these considerations is critical, and they also can help you determine how and when to reach out to others for support – like your peers or your instructor. Even if you strongly agreed with all these statements, you can consider ways to share your positive approach with others in the course who may be struggling. Now you've reflected on your own attitudes, consider the experience of this student who has taken classes like the one you're currently taking.

Student 2: [00:02:57] I worried that my high school classes had not prepared me well for college science courses like chemistry and anatomy. Honestly, when I enrolled in my first online class, which was biology, I thought professors and the other students were scary. I thought the instructor was a very harsh grader and the other students could also be really harsh in the online class discussions. I worried about whether the other students thought I was smart or liked me. I was nervous about responding in the forums or using the chat in class, and I didn't want to ask people for help with assignments. After some time, I was assigned a group project. I interacted more with the other students in my class and I realized that I was not alone in my fears and my experience of being in college science classes was like theirs. I began to feel more comfortable after connecting with more students. I got to know them and I started enjoying class more. I also became more comfortable asking for help when I had trouble with an assignment, both from my professors and other students. It took time, but now I really feel like I belong in the community here, even online.

Narrator: [00:04:03] At this point, we recommend you pausing the video to reflect on this story. At the end of the video, there will be an assignment in which you capture your thoughts. Consider: What did you learn from this student's experience? What does hearing this make you feel? Now, listen to another student's experience.

Student 3: [00:04:29] My first few weeks in this online statistics course, I didn't really understand what I was doing. I don't think most people in my class did. And when I signed off on the lecture, I would just go home and do more stats problems. I was just doing the same problems over and over again. I felt stressed all the time, but that's how I thought online courses like this were, just like lonely and hard to get through. But then I talked with a few other students during a breakout group in class, and we decided to try to create kind of like an online study group. It was really helpful – talking about the class and quizzing each other and reaching out to the TA and even the professor sometimes with questions helped me to understand the material better. I learned that talking through with other people helped me get unstuck when class gets tough or when I don't understand a problem.

Narrator: [00:05:23] At this point, we recommend you pause the video again to reflect on this story. Again, at the end of the video, there will be an assignment in which you record your thoughts. Consider: What strategies did this student use to feel more connected? Have you used a similar strategy before? Reaching out to your peers is another strategy, even in virtual settings. Create an online study group, use social chat forums, join virtual tutoring sessions. All of these



will help you build a support network to make the work feel more manageable and ease feelings of isolation. In this video, we outlined two tips to help you better manage your online learning and help improve your sense of belonging in an online course. Tip one: Take a few minutes to reflect on your own motivation. Do you feel you belong in this course? Do you feel alone? Are you motivated to succeed? If you don't feel motivated, it may be because you don't feel connected with other students and your instructor. So you may want to consider tip two. Tip two: Don't forget your peers in your class. Engage with them to ask each other questions about course content and remind each other about upcoming assignments, quizzes, and exams. Most importantly, remember, you are not alone. Many students feel isolated and like they do not belong. They may doubt that they can succeed in online college level math and science courses.

Student 1: [00:06:54] Sometime during my first year, I realized that almost everyone feels overwhelmed and isolated at times, especially during online college-level courses. It's just a process that everyone goes through. It takes time to find your own way of keeping things in balance in a virtual setting. Now it seems ironic. Everyone feels like they're different at first when really we're all experiencing a lot of the same things.

Narrator: [00:07:17] After this video, record your reflections on the questions posed throughout. You'll be asked to reflect on a time when you may have used similar strategies before and think about how you will use such strategies in your current course. In the next video, you'll take a deep dive into another strategy to help better manage your learning. You'll learn more about how that strategy will help your learning and how to implement it.

Video 2: Managing Your Learning Time

We're all busy, and many students have jobs, families, and other commitments that make it challenging to find time for learning. Planning learning time over the course of a day and a week is vital to success in a course. Here is a second video on how to strengthen your skills to effectively manage and structure your learning time. This ten-minute video describes how to manage your time, presents student illustrations, and asks you to reflect on your own time management skill and how to implement the strategies to strengthen it. You can watch the video [Managing Your Learning Time](https://www.youtube.com/watch?v=O4X3fWYO4II) (opens in new window) directly.

Plain text: <https://www.youtube.com/watch?v=O4X3fWYO4II>

Transcript

Narrator: [00:00:06] Hello and welcome to the second module of a series of videos on self-directed learning. This video will give you some specific tips on how to manage your learning to get the most out of the time you have available. Remember this student? While she's feeling much more connected to others in her online math class, she's still struggling with the workload of learning online. Consider her reflection.



Student 1: [00:00:30] A few weeks into the class, we had our midterm. While I didn't think I was ever going to be a math genius, I thought I could do okay. All of a sudden, it was the day before the test and I hadn't started studying. I crammed the night before the test, rereading assignments and reviewing the lecture videos. While I wish I had more time, I thought I had done enough. But when I got my grade back, I was shocked by the low score. I didn't know what had happened and I didn't know where to go for help.

Narrator: [00:00:57] This reflection shows that many students often struggle with effectively managing their time, particularly as they have competing responsibilities like a job or family and lots of other classes. This second module will offer a series of specific strategies and tips to help you reflect on your current practices for managing your learning; learn more about how to space your learning over time to avoid feeling overwhelmed; learn how to structure your study sessions; and deepen your understanding of the importance of seeking help when you need it. First, let's consider how you currently structure and manage your learning. For each of the following statements, rate yourself from a score of five, meaning you always do it, to a score of one, meaning you never do it. I read the syllabus at the beginning of the course to know when my major commitments will be. I set goals for myself and of course to support my academic success. I know when I am on track to meet my learning goals. I seek help when I'm struggling. Reflecting on how you currently manage your learning is key to understanding how you can be more effective and efficient in your learning. Creating plans, establishing goals, and seeking help are all critical steps in building your self-directed learning toolkit. Critical to managing your time is practicing spacing your learning. Consider these two students enrolled in the same course. Xavier watched the lecture video for Unit 1 and completed the practice problems. He did the same for weeks two and three. Two days before the exam in week four, Xavier reviewed the lecture videos and practice problems for all the units. Jasmine watched the lecture videos and completed the problems immediately following Unit 1. After learning the content for Unit 2, Jasmine revisited Unit 1.

Narrator: [00:02:57] In week three, Jasmine learned unit three content as well as doing a refresher for Unit 1 and 2. By week four, Jasmine had a strong understanding of all the content and did not need to cram anything in the last days before the exam. Take a moment to pause the video. What was the difference in how these two students approached learning the material? Which do you think was more effective? Why? This example demonstrates tip two: spacing your learning. Research shows that spacing your learning is far more effective than cramming or massing your learning. Instead of cramming or restudying content all at once just before a large assignment or exam, space out restudying over a few weeks. Spacing acts much like a snow globe as it lets the content settle. And then you can shake it up as you learn more content. But remember, let the snow globe settle after each shake to make them look more effective, much like how spacing your learning helps you better retain information. Importantly, spacing requires the same amount of time studying, it is just spread out over time. Spacing not only reduces your stress levels before a test, but it also makes it more likely you'll remember the content after the course is over. Key to is spacing your learning is self-quizzing. Make sure you go back to earlier units to review that content. You can also quiz your classmates, make a game out of it. Redo the practice problems



without looking at the answers or create flashcards with key terms to test yourself to see if you or your friends still remember it before you move on. Despite best-laid plans, there will likely still be days when you have a lot of studying to do. What then? Consider this student's approach.

Student 2: [00:04:48] There was one particular stretch in one course. I had a midterm and some nasty assignments all due at the same time. I was stressed. One day, I remember I was trying to finish up an assignment and I had to study for the midterm later. It was going to be a very long day, but I made a plan. I was going to focus on finishing up the assignment first and then set a goal to review three chapters for the midterm. After I achieved my first goal of finishing the assignment, I took a break and called home. I talked to my mom. It was just a five-minute call, but when we hung up, I felt so much better. Next, I turned to reviewing the chapters. I realized I needed to break up the work. So, after I reviewed each chapter, I rewarded myself. I went for a walk. I got a snack. Something else. There was so much going on. Sometimes you have to take time to give your brain a rest.

Narrator: [00:05:48] Pause the video again to reflect. How did the student structure their learning time? What strategies did they use? This student implemented the third tip: structure study sessions. Take the following steps to structure your studying. Step one: Set a goal. What do you want to achieve in this session? How will you know you achieved this goal? Step two: Work backwards from this goal. How will you break up the content you need to learn into manageable chunks? Create a to-do list. Each item on this to-do list should only take 30 minutes. If it takes longer, then you should break it up even further. Step three: Study with a focus, checking things off your to-do list. Step four: Every time you check something off, reward yourself with a short, under-five-minute break. Go for a walk. Grab a snack. Repeat steps three and four until you achieve the goal you outlined at the beginning of the study session. And don't forget some more traditional time management strategies. Use the 1-to-3 time ratio. For every hour you spend in your online class, you should spend three hours outside reviewing the material. Create a master calendar where you put all of your commitments, personal, academic, professional, in one place. Do not multitask. Focus on one task and complete it before moving to another. Avoid distractions when possible, such as working in a quiet location or silencing your phone.

Narrator: [00:07:24] In this video, we explore three tips to better manage your learning. Tip one: Understand your own time management style. Tip two: Space your time to review, reread, and practice what you've learned. Tip three: Structure your study time by setting goals, writing to-do lists, and allowing times for breaks. After this video, you will be asked to record your reflections in an assignment on the questions posed throughout this video to help document your thoughts. You'll be asked to create a plan for the upcoming few weeks before your next exam. What material do you need to know? When will you learn it? When will you restudy it? What kinds of study goals will you set? Remember, you are not alone in this effort. You can always ask for help. Knowing how and when to ask for help is a critical study habit. Engage with your peers to ask each other questions about course content and remind each other about upcoming assignments, quizzes, and exams. Your school may have a tutoring center, or your instructor may have group office hours. If

you're unsure of how to ask for help, reach out to your instructor. Your instructor can support you throughout this process, providing you resources and strategies to help you better manage your own learning.

Video 3: Developing a Growth Mindset

Have you ever experienced a loss of confidence after a challenging experience at school or at work? Developing a growth mindset can help keep challenges in perspective and help you persist, even in the face of setbacks. The brain acts like a muscle in that it can grow with practice and effort. Here is a brief video on how you can increase your intelligence through effort. This ten-minute video describes how to develop a growth mindset, presents student illustrations, and asks you to reflect on your own growth mindset and how to implement the strategies to strengthen it. You can watch the video [Developing a Growth Mindset](https://www.youtube.com/watch?v=1xmfRBEKjKw) (opens in new window) directly.

Plain text: <https://www.youtube.com/watch?v=1xmfRBEKjKw>

Transcript

Narrator: [00:00:06] Hello and welcome to this module in a series of videos to support self-directed learning. This video will give you some specific tips on how to develop a growth mindset. Students with a growth mindset find challenging coursework motivating, not discouraging, because they understand that our intelligence grows with effort. Consider the following student's story.

Student 1: [00:00:30] I have felt that math is just not my thing, and that's okay since I'm better at other things. Also, my parents have always said my brother is the one in the family who is good at math, but not so much me. When I'm in a math class, I sometimes feel frustrated. Math seems to come so easily to my brother and other people in my classes. I guess I'm just not a math person. I know I need to take math to graduate, so I chose the easiest course. Even so, it doesn't matter what I do, I won't be able to get an A. The best I can hope for is to pass this course. And so I'll just do enough to pass. No point in working too hard.

Narrator: [00:01:11] This reflection may sound familiar. It may be your experience or those of your peers. It shows that students often have a fixed mindset about their intelligence or talents. This means they believe that people are born with a certain amount of intelligence and nothing can increase it. Students with a growth mindset believe they can develop their intelligence through hard work. Research shows students with a growth mindset are more likely to succeed in school. This video will give you tips to understand what growth mindset is. Develop a growth mindset and find additional resources to support your learning. Let's start with your brain. Think of it as a muscle. Your brain changes and grows as you learn new things. Think about something you can now do easily you couldn't do when you were younger. Maybe it's playing a sport or an instrument, or speaking in another language, even riding a bike. When you first attempted this, did you struggle? You most likely did. Everyone struggles when they start something new, but



we get better and faster with more practice. This is due to something called neuroplasticity. Your brain is comprised of billions of cells called neurons that send signals to each other like an electric communication network. Scientists have shown how neurons in different parts of the brain send each other signals as we process information. When you learn new things, you are strengthening the connection between those neurons. This means your brain can adapt and change, making you smarter.

Narrator: [00:02:42] Not only can your brain grow, but your actions can make it grow. Growth mindset is the understanding that you can grow your brain through hard work and effort. Alternatively, a fixed mindset is the belief that your brain is a certain way and cannot change. Students with a growth mindset are more likely to challenge themselves and succeed in their efforts. Let's take a moment to reflect on your own mindset. For each of the following statements, rate yourself from a score of five, meaning you strongly agree, to a score of one, meaning you strongly disagree. I like my work best when I can do it perfectly without any mistakes. I like my work best when it makes me think hard. When I work hard, it makes me feel as though I'm not very smart. I like work that I'll learn from, even if I make a lot of mistakes. Look over the statements and take a moment to pause the video to consider your answers. If you agreed with the odd numbered statements more than the even ones, that suggests you might have a fixed mindset. If you agreed with the even numbered statements more than the odd, you are already cultivating a growth mindset. Next, we will share some strategies that can strengthen your growth mindset. The first strategy is to combat negative talk. Instead of focusing on the negative, reframe your thinking to see a challenge as an area of growth. Consider this student's story.

Student 2: [00:04:15] My first semester in college, I enrolled in a biology course. My high school counselor had told me years earlier that science wasn't really my strongest subject, but I wanted to challenge myself. When I got my first quiz back, I was really disappointed in the grade. My imagination was going wild. What if the counselor was right? What was I thinking by signing up for this class? I told myself that I was messing up as usual and that I was out of my league. These thoughts were like dark clouds that followed me around for days. After a while, I realized that these voices in my head were making me feel discouraged and sad. I could barely bring myself to open my biology book. I needed the negative thoughts to stop. So I started challenging them. When one would come up, I'd say, I'm doing the best I can. This grade helps me understand what I need to study more. I'd replace negative thoughts with positive thoughts. I have overcome challenges before. I remember when I used to struggle with singing and now I'm so proud of my voice. Even if I don't succeed at first, I can learn from my mistakes. All these things helped me bounce back from the bad grade, regain my sense of perspective, and focus on my studies.

Narrator: [00:05:41] Take a moment to pause the video. How did the student reframe their thinking to be more positive? The second strategy is to celebrate mistakes. Your brain grows more when you make a mistake than when you get things right. The process of taking the time to understand why you got something wrong is a powerful engine for mental growth. Mistakes will happen if you do make a mistake. Work through the following steps. Admit your mistake and take full



ownership. Don't blame anyone. Review all available feedback carefully. Define exactly what you did wrong. To understand why and how you made the mistake. Develop a plan of action to correct the mistake. Consider checking your plan of action with a good friend or family member. Once you follow these steps, you'll find that you have a more positive feeling about the mistakes that you make, and you'll realize that they are just opportunities to grow your brain. Take a moment to pause the video. Think of some mistakes that you have made that have ultimately taught you how to improve your performance. What mistakes have you made in your current class that you might explore more closely? The third strategy is practice makes perfect. Consider this student story.

Student 3: [00:07:02] When I first enrolled in an online statistics college course, I found it really hard to keep up with all the content. It just seemed super complicated. But then I remembered how I learned how to make free throws in basketball. It took me a lot of practice until I could hear the swish of the net. I had to start from two feet from the basket and keep practicing my form. Only after a long time could I make the shots consistently. With that in mind, I stuck with the stats class. I completed all the practice problems assigned even those that I thought I already knew how to do. I reviewed my class notes and searched on the internet how to further understand key concepts. Even if I finished a homework assignment, if I felt any doubts about my approach, I asked my instructor for more practice problems. Even though it took me a little longer, I realized that this extra practice really helped me to learn.

Narrator: [00:08:02] Take a moment to pause the video. What skills have you developed through repeated practice? What areas do you think you should practice to excel in your current class? In this video, we outlined three tips to help you develop a growth mindset. Tip one: practice positive talk. Reframe your thinking to avoid thoughts such as, "Well, I'm just not a math person or I'm just stupid." Remember this video. We can all grow our brain. Tip two: celebrate mistakes. Mistakes are opportunities to learn. Your brain grows more with each mistake and reflection you make. Tip three: practice makes perfect. Academic learning is just like sports, music, or art. After this video, you'll be asked to record your answers to the questions throughout. You'll be asked to reflect on a time when you overcame a struggle to learn something and to reflect on the times when you failed at first but, through perseverance, your brain became stronger and you eventually became better at the task at hand. This video and these tips are just the beginning. Your college will have additional resources. Reach out to your instructor or tutoring center. Developing a growth mindset takes time. You may even say you need a growth mindset about developing a growth mindsets.



Appendix C: Prompts Adaptations and Customizations

Adding Content-Specific Prompts

Instructors can modify the prompt questions to make them specific to aspects of the course while still maintaining a focus on preparation and reflection. Some examples of content-specific prompts that can be added to the reflection questions include:

- ➡ 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? (3–5 sentences)
- ➡ This unit is focused on [topic]. As preparation for your upcoming test, write down everything you remember about [core concept about topic] below. Then, check your notes to see if you are missing any key information. List the information you initially forgot about [core concept].
- ➡ What did you do to prepare yourself for [recent assignment]? What resources did you use to complete [recent assignment]? What can you do to improve your understanding for next time?

Referring to the SDL Video Topics

The prompts can also be adapted to relate to some of the topics of the videos, depending on when the videos are assigned during the term. Some example questions include:

- ➡ Will you use any approaches from the Managing Your Learning Time video to help you think about your coursework for this week?
- ➡ How can you build connections with your peers in this class, such as asking a fellow student to study with you, as you think about completing coursework?
- ➡ As you think about concepts you may be struggling with, reflect on the ideas in the Developing a Growth Mindset video. How could you learn from your experiences so far in this class?

Adapting Prompts for Asynchronous Courses

Instructors may need to adjust language to meet specific course structures, such as an asynchronous course where students are mostly self-paced with a small number of due dates for the course. Below is one example for how to do this (**blue bold text** highlights the adaptation).

- ➡ **Original prompt:** 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?**
- ➡ **Adapted mid-unit prompt, asked 1–2 weeks before the unit completion due date:**
What assignments and other coursework do you **still need to complete for Unit X?** What information, resources, or help do you need to complete **Unit X's remaining coursework?**



Appendix D: SPIN Examples and Additional Guidance

Alternative SPIN Collaborative Reflection Tools

In the SPIN Ready-to-Use Text section above, find the SPIN Collaborative Reflection Tool. This section provides alternatives that instructors can use in place of the tool if they are more applicable to the activity, course, or student population.

Team Reflection Tool

Collaborative reflection prompts	N/A	Needs improvement	Good work	Excellent work
1. Team members had well-established common goals.				
2. Team members understood their roles and tasks.				
3. Team members communicated well with each other.				
4. Team members managed their time well (completed tasks on schedule).				
5. Team members listened to each other with respect.				
6. Team members gathered and provided useful information to meet project goals.				
7. Team members gave a similar effort.				
8. Team members offered each other support.				
9. Team members put a great deal of organization into the work.				
10. Team members produced high-quality results and solved problems.				
11. Team members identified difficulties and/or effective approaches.				
12. Team members had fun and enjoyed the experience of working together.				
13. During team meetings, all members were encouraged to speak up and share thoughts and ideas.				
Reflection questions (Write 1–2 sentences for each question)				
1. What did the team do well?				
2. What did you do well?				
3. What areas needed improvement?				



Self-Reflection Tool

This tool has three categories of questions: communication (Items 4 and 5); teamwork (Items 1, 2, 3, and 10); and adapting to workplace/situations (Items 6, 7, 8, and 9). A score of 1 indicates “emerging,” 2–3 “developing,” 4–5 “proficient,” and 6 “advanced.”

Self-reflection item	1	2	3	4	5	6
1. I made sure I understood my assigned role before working on my individual task.						
2. I cooperated/worked well within the group.						
3. I assisted other group members when needed.						
4. I provided a well-written section or piece of a final product.						
5. I communicated my ideas or concerns well.						
6. I contributed a great deal to the presentation or other group products.						
7. I displayed a positive attitude.						
8. I respected deadlines.						
9. I respected other group members' ideas.						
10. I contributed useful ideas and materials.						

Example Collaborative Activities

Below are examples of collaborative activities that can work in asynchronous online courses as well as courses with synchronous components. To facilitate asynchronous collaboration, instructors can use the Groups function in the LMS to create shared workspaces and discussion boards. Shared documents can also allow students to contribute ideas and offer one another feedback asynchronously.

- ➡ **Share Assignment Approaches:** Students review an assignment (e.g., homework, problem, or project) and share with their peers their approaches and any resources they found useful. After they discuss, students can share the key points of their discussion with the entire class.
- ➡ **Students Seek Help as a Group:** Students share which concepts they are having difficulty with, discuss what is making the concept challenging, and then submit a group question to the instructor or arrange a group office hour with the instructor.
- ➡ **“Jigsaw”:** Each member of a group reads a specific section of a text, solves a subset of questions in an assignment, or becomes an “expert” in one topic. Then, the group members work together on a shared task that requires the knowledge or expertise of each group member.
- ➡ **Create a Study Guide:** Students divide up sections of a unit or course and take responsibility for creating practice questions or key takeaways to prepare for an assessment. Group members offer feedback on one another’s sections, compile their work, and share their completed study guide with the class.
- ➡ **Concept Mapping:** A concept map is a visual representation of concepts that are connected, often presented as a diagram, flow chart, hierarchy map, or system map. Students can collaborate to create this map for a particular topic area. Or the instructor can create part of the map and build in sections for students to complete or errors for them to fix.



Best Practices to Support Collaboration

Challenges of collaborative work include low participation, student skepticism, and uneven learning outcomes. In online courses, these challenges intensify, as many students may feel disconnected from peers and may be reluctant to engage in real-time collaboration. Below are suggestions for how to design the collaborative activities to promote engagement.

Common challenge	Solution
Students do not engage constructively with the collaborative activities.	Incentivize participation. • Make the introductory questionnaire a graded assignment. • Offer extra credit for completion of activities. • Require submission of reflection and expectations as part of the assignment. Group students intentionally. • Keep group sizes smaller than five students to ensure each student has a meaningful role and voice in the activity. • Develop thoughtful ways to assign students to the groups, such as by using the information gathered in the introductory questionnaire around preferred work times.
Students prefer to work individually than in groups.	Explain the purpose of working in groups. • Working in groups is an important skill to master for many future job environments. • Working in groups helps students connect and learn how to share responsibility for completing important tasks.
Students feel uncomfortable participating in their groups.	Support relationship-building. • Provide examples of team ice breakers and introductions, such as by sharing the results of the introductory questionnaire and encouraging all team members to demonstrate reliability and work ethic. • Encourage the use of online meeting tools and ensure they support different types of interactions. Shared workspaces around documents are helpful. Consider creating group chats within the LMS or on an outside platform (e.g., Google Meet), as some students may be more comfortable when they can collaborate using tools outside the course LMS.
Students are uncertain what they can do to support their group success.	Assign effective collaborative activities, with clear roles for each student. • Assign an activity that allows each team member to have a clear, distinct role and allows each student to contribute. • Activities should balance collaboration and independent work so that students engage in dialogue and cooperation while also completing some tasks on their own. • Set clear expectations around the collaborative work, such as outcomes, levels of contribution per team member, and some examples of how to contribute. • Encourage each group to identify clear roles and responsibilities at the beginning of the collaborative activity, such as by completing a team plan (see example below).



Common challenge	Solution
Students experience collaboration inefficiency and conflict when working in groups.	Share best practices for team meetings. - Encourage students to have agendas, set a timeline for working together, and keep records of meetings. - Support students in identifying approaches for how to resolve problems. - Encourage students to set group agreements around listening, speaking respectfully, taking turns, and acknowledging team member contributions and achievements (see examples below).
Students feel disconnected from their instructors when participating in peer work.	Provide ongoing support. - Serve as a consultant to monitor progress, provide encouragement, and honor astute team member contributions. - Schedule optional meetings with each collaborative group. - Create mini deadlines throughout collaborative work to check in on group progress.

Example Team Plan

Instructions: Discuss each question or prompt as a team and document a team response to complete your project plan.

- What is the goal of your team project?
- Who are your team members and what are their strengths?
- How and when will your team communicate to coordinate work, check on the status of tasks, and support each other? Consider how you might use email or other digital communication.
- Based on the goal of the project and team members' strengths, identify each person's role and key responsibilities on the project in the table below. An example is provided in the first row.

Team member	Role name and key responsibilities
<i>Teddy</i>	<i>Manager</i> <i>Schedule meetings</i> <i>Track progress on tasks</i> <i>Send group reminders</i>

- What are the tasks your team needs to complete for the project? Complete the table below to detail the tasks that need to be completed, the people responsible for each task, and the date the task should be completed. An example is provided in the first row.

Task	Who will complete?	By when?
<i>Conduct research on the causes of air pollution in our state</i>	<i>Michelle</i>	<i>Thursday, February 3</i>



Example Group Agreements

- ➡ **Respectful Communication:** Respect team members' differences and be constructive in communication.
- ➡ **Nonverbal Skills:** Use positive vocal or written tones, facial expressions, and body language to convey a positive attitude about the team and its work.
- ➡ **Positivity:** Motivate teammates by expressing confidence about the importance of the task and the team's ability to accomplish it.
- ➡ **Helpfulness:** Aid and encourage fellow team members.

Tips on Conflict Resolution

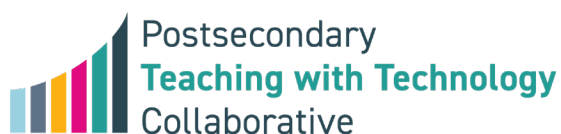
Instructors can explain that some conflict is normal and that knowing the type of conflict can help address it. Below are some tips on how to manage two common types of conflict.

- ➡ **Relationship Conflict:** Relationship conflict refers to interpersonal disagreements related to miscommunication or contrasting interests or values, or experiences of frustration over differences in personal treatment or resources. To reduce the possibility of such conflicts, instructors can set norms of taking turns, listening, using respectful language, and asking team members to focus their feedback on ideas. Should friction emerge among team members, instructors can address it directly by using strategies to encourage team members to express their concerns and negotiate a “win-win” solution for all involved.
- ➡ **Task Conflict:** Task conflict occurs when team members disagree about how to complete an assignment or the arrangements for getting the work done. Such conflicts have positive potential because they can lead to more creative solutions. Instructors can set norms that everyone on the team can share ideas and that team members should be cooperative and willing to compromise. Frame team challenges as opportunities for learning and improvement. When conflicts emerge, instructors can ask questions so that team members can explain what is happening and what they aim to improve. Instructors can frame the new information as helpful and encourage everyone to focus on common goals, generate and evaluate different solutions, and build on the ideas of others. The goal is to reach consensus.

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