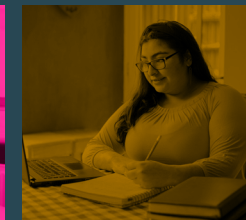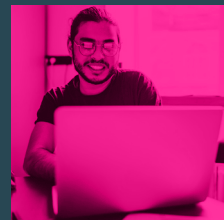# Beyond Engagement:
Promoting Motivation and Learning in Online Courses

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

With these issues in mind, the Postsecondary Teaching with Technology Collaborative is exploring how to improve teaching in online STEM courses. In partnership with nine broad-access institutions (including seven community colleges), we aim to develop and test easy-to-use tools to help instructors support their students in developing what we call self-directed learning (SDL) skills—motivational, metacognitive, and applied learning processes that help students maintain effort, reflect on their learning, plan and set goals, and adjust their study strategies. For more information about our SDL framework, which guides the Collaborative's research, see Yarnall et al. (2023).[5]

Studies on SDL have focused on evaluating the effectiveness of interventions to improve, for example, students' growth mindset and their sense of belonging.[6] Previous research conducted with the Collaborative's partner institutions has shown ways that faculty and student support structures—such as college orientations and affinity groups—have the potential to help students strengthen their SDL skills. This research has also shown that faculty need additional support to incorporate SDL skill development into their online instruction.[7]

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In this brief, we build on these studies by examining students' self-reported experiences and perceptions of developing and using SDL skills in online courses. We conducted interviews with 25 students enrolled in online STEM courses at eight of our nine partner institutions. Roughly half of the interviewees were enrolled in fully asynchronous online courses with no required virtual or in-person meetings. This course format poses particular challenges for engagement and learning, so perspectives from this population of students are especially important. Drawing on data from the entire sample, we present findings about students' experiences in online courses, their approaches to online learning, their reflections on the utility of SDL skills, and their beliefs about what instructional strategies help them succeed. We conclude by recommending ways that faculty can foster students' SDL skills in online courses. While our research plan focused on students taking STEM courses online, our findings and recommendations—which are based on the themes that were emphasized by our interviewees—are likely applicable to online coursetaking generally.

Previous Research on Online Learning

Much of the existing research on students' online learning experiences and the quality of online teaching focuses on student engagement with content, peers, and instructors. Findings show that students enrolled in online courses are less likely to engage with peers and instructors[8] and to feel part of a learning community.[9] Classroom community is important to students and affects their academic motivation and how comfortable they feel with their peers in their online courses.[10] While there is no single right way for students to engage in their online courses, research has found that less engaged students report more negative experiences with online learning and experience poorer course outcomes.[11] Researchers have found that students' interactions with their peers and instructors are among the most important elements in supporting student success and creating positive learning experiences in online courses.[12] Specific practices to address isolation include offering multiple communication channels, providing timely feedback, being available to interact with learners in real time, and creating opportunities for collaborative learning.[13] While research on online STEM learning shows similar trends, there are challenges specific to online STEM courses, including heightened student apprehension about the subject matter (e.g., math anxiety), cultural norms in STEM that emphasize competitiveness, and the importance of hands-on learning in the laboratory environment.[14]

Students come to the online classroom with diverse experiences, outside responsibilities, values, and learning preferences, which influence how they engage in their online courses. For students from cultural backgrounds that value and promote interdependent learning, online courses with limited opportunities for social interaction and understanding may feel especially isolating.[15] Given disparities in outcomes in online courses by race, researchers recommend designing online courses that enable students to reflect on, incorporate, and elevate their own cultures, values, and experiences while learning the material required for their success.[16] Recommended practices include incorporating

culturally relevant content and multimedia resources, validating students' prior knowledge, building community through discussion boards and other collaboration tools, and offering course-based leadership opportunities.[17]

In our analysis, we expand on this research about effective online instructional practices by exploring online students' experiences with motivation, metacognition, and applied learning—three mutually reinforcing skill development processes that comprise SDL. By elevating students' perspectives, we seek to identify mechanisms through which online course instructors can promote engagement while also fostering SDL skills and processes associated with academic success.

Data Sources for This Study

From spring 2022 to fall 2023, we spoke with students enrolled in online STEM courses to learn about the strategies they used to manage their online learning, what influenced their learning approaches, and how they understood self-directed learning processes. In the interviews, we did not use the term "self-directed learning"; rather, we asked about specific skill and process areas in our framework, including motivation, reflection, sense of belonging, time management, planning, and goal setting. In some cases, we opted not to use terms in our framework (e.g., metacognition and self-efficacy) and instead used more familiar terms such as "managing learning" and "confidence."

Over three waves of data collection, we conducted 36 semi-structured, virtual, and mostly individual interviews with 25 students (we conducted one focus group interview with three students together). Across the full sample, students were recruited from online and hybrid STEM courses in a range of disciplines, including math (algebra, geometry, and calculus), life sciences, chemistry, and physics. Interviewees ranged in age from 18 to 40 years old. Most students were recruited from online courses that were fully asynchronous (n = 11; 44%) or included virtual synchronous components (n = 10; 40%). Four students were recruited from hybrid courses that included some in-person time (16%). The sample was racially and ethnically diverse, with about a quarter identifying as Hispanic/Latino/a/e and a quarter identifying as White. Nearly three-quarters of the students identified as female. See Table 1 for a summary of the sample characteristics.

Interview protocols focused on the online or hybrid STEM course from which the student was recruited. However, students had the opportunity to reflect on their learning in other courses, so some students provided information about their experiences in courses in other modalities and disciplines.

Table 1. Student Characteristics

Sample Characteristics	Number (out of 25 in total)	%
Gender		
Male	6	24
Female	18	72
Prefer not to say	1	4
Age (years)		
≤ 25	16	64
26–30	2	8
31–35	5	20
≥ 36	2	8
Race/Ethnicity		
Asian	2	8
Black or African American	3	12
Hispanic, Latino/a/e	6	24
Middle Eastern or North African	1	4
Native Hawaiian or Other Pacific Islander	4	16
White	6	24
Prefer not to say	3	12
Course Type		
Online and fully asynchronous	11	44
Online with synchronous components	10	40
Hybrid: includes in-person components (including labs)	4	16

Findings: Student Perspectives on Online Coursetaking and SDL Skills

Overall, interviewees expressed a range of opinions on online courses. Some preferred the format because they enjoyed working at their own pace; others were more ambivalent. Some stated that they preferred learning in person but selected an online course because it offered flexibility and convenience. In what follows, we present four themes that emerged from our conversations with students about their online learning experiences, what they want from them, and, in particular, the ways in which elements of online coursetaking might affect the development of important SDL skills.

1. Students are motivated by interactions with peers and faculty.

Under the Collaborative's SDL framework, motivational processes refer to shifts in students' emotions and beliefs around learning, including students' feelings of control, confidence, and sense of belonging.[18] Students with more positive motivational beliefs tend to have stronger academic outcomes.

Our interviews suggest that opportunities for students in our sample to connect and engage positively with instructors and peers in online courses helped them stay motivated. In accord with previous research, most interviewees cited relatively few opportunities to engage with other students in their online courses, and many reported feelings of isolation. While online courses with a face-to-face component facilitate spontaneous interactions between instructors and students, interactions in asynchronous courses must be cultivated much more intentionally. Although some students shared that they preferred working alone at their own pace and did not desire additional interactions, most interviewees reported that disconnection from other students was a challenge in online courses:

> I've definitely been personally, like, a lot more secluded and isolated. And, you know, especially during the years that you're going to college, it's just—it's so different and hard to adjust.

We identify three types of interactions with peers and faculty that support motivational processes that build confidence and sense of belonging. First, several interviewees spoke about the value of hearing other students' questions about course content, assignments, and materials. As one student explained,

> [In an in-person class,] I'm not the only one if I'm asking questions. Luckily, there are other people as well asking questions. [Usually in an online class,] I don't know if anybody else has excellent questions on the same assignment. [If I know they have questions,] I feel more comfortable.

Students reported that in online courses they were less likely to know whether other students had similar confusion or struggles with course content. Students who assumed they were the only ones facing challenges were likely to feel demotivated and less confident and to experience uncertainty about whether they belonged in the course. One student shared the sense of relief they felt when they learned through a study group that other students had also been confused by an exam topic; this led to a realization that their experiences were normal, which motivated them to continue with the course.

Second, interactions with peers and faculty can provide an opportunity to highlight the relevance of course material to students' lives and interests and thus improve motivation. While curricular materials may invite students to make their own personal connections to content, some interviewees reported that it would be more motivating if their peers and instructors engaged with content that connected the outside world to their academic work. One student said,

> I think utilizing the discussion forums would be nice—utilizing the discussion forums to talk about real-life experiences or being able to bring in the lectures from our perspective: "How can we relate this to something that might be happening today?"

Notably, we also heard that discussion board assignments in online courses were sometimes confusing, tedious, and irrelevant. This suggests that it is not the use of a discussion board in itself but the types of questions posed and the nature of the information shared that may enrich students' experiences. Students also appreciated hearing directly from faculty (via video or email or synchronously) about their personal connections to course content:

> *I can see how much [my instructor] enjoys what he's teaching. ... Seeing him helps me realize that he enjoys what he does. ... He goes off on these little things that he finds interesting. I don't think he knows how helpful it is. But it is helpful because it's things that are not necessarily in the book but he's experienced in his line of work. Because it's his major, it's something that he feels strongly about.*

Finally, students reported that caring and encouraging interactions with faculty, though rare in online asynchronous courses, positively influenced motivation:

> *I specifically have one professor—she's a chemistry professor—and she's got an empathetic point of view and a very open and honest way of approaching a difficult subject that has been fulfilling. And I guess to tie that into ... online learning, that is where that gets a little bit lost. You lose that connection to your professors that sometimes can really make or break a class for a student.*

Although students reported that emails from instructors could be motivating, many of the students' examples of motivating faculty interactions occurred in optional synchronous meetings offered in the context of an asynchronous class:

> *We didn't have any required meeting times or anything, but he would offer weekly [optional, virtual] times that you could join to do case studies and just kind of work together; we'd play a Kahoot and stuff. And then he would also do test review sessions after every test; you could schedule a meeting with him. So, I still got to know him pretty well, even though it was online. ... And I felt like he just cared. Like when we went over tests, sometimes I felt like I didn't do so well or as well as I expected, but then he would just make me feel more confident about it.*

Concerns about isolation and lack of engagement in online courses are well documented in the literature; our analysis shows three specific ways that interactions with peers and faculty can improve motivation in online courses: helping students see they are not alone in their struggles, providing opportunities to discuss the relevance of the course, and delivering messages of encouragement and care.

2. Students want more help in developing applied learning skills.

Metacognitive and applied learning processes refer to how students plan, set goals, select and implement learning strategies, and reflect on and adjust their approaches. These processes include the development of skills such as managing time and taking notes.

Students in our sample reported challenges in identifying effective learning approaches in online courses; these challenges were especially acute among students enrolled in asynchronous courses. Interviewees described an array of learning resources in their asynchronous courses, including videos, lecture notes, notetaking templates, slides, practice problems, and instructional materials from courseware packages, as well as links to supplemental web-based materials. Students found these materials both beneficial and overwhelming, and without the kind of instructor guidance available in synchronous courses, they were often unsure of the best way to use them. Several students reported that, in retrospect, they had not used course resources effectively. For example, one student discovered midway through the course that the textbook was less useful than course videos for exam preparation:

> I was like, "You know what, let me check what these videos are really about." And I have come to learn that the answers that she tests us on [on] these quizzes were literally in the video. Her methods aren't in the book. So ... I've read the book, but it's like ... she's explaining what she wants, so she's testing you on what she taught you. So I'm like, "Okay, well, I guess I should have been watching the videos."

Alongside challenges with using course materials, students commonly reflected on opportunities to improve their approaches to learning:

> Whatever I studied before, I didn't retain it. ... I was maybe 45 minutes studying, and then I'll take a break and come back and see what I got from that. And sometimes I just didn't get all the material. ... So, I was like, "I gotta make some changes. I gotta focus."

> I would like to have better notetaking skills. Well, what I mean by that is, when I'm watching the instructor, or I make my notes, but then let's say two weeks later I forgot what the instructor said, so sometimes my notes don't make sense.

Importantly, students reported that easy-to-navigate course structures with predictable patterns and deadlines helped them stay organized:

> What I really like about him is, instead of separating [the course] by units, he separated by weeks. So that way, you're more organized because you're on week five; you press "week five," and you learn everything that's [in] that folder.

> The assignments for this class, since it was asynchronous, are pretty reliable. Every Thursday, there was a discussion ... and every Friday, there was a new lab.

When we asked students how they developed their approaches to learning (including time-management practices and study strategies), they were most likely to refer to guidance they received in high school, experiences in the workplace, or techniques they developed through trial and error. Students reported few instances of college instructors providing guidance about the best ways to approach their learning in their online STEM courses. When they did receive such guidance, students appreciated it:

> It is a weekly email … for the whole class …, a rundown of the week, like, "Hey, don't forget, we have two modules this week instead of one." "Hey, don't forget, like, there's this assignment due, and, you know, you might want to space it out like this instead of like this."

Students we interviewed desired additional information about the best way to employ the wealth of resources that were commonly available in online courses. They appreciated it when courses were well organized; this provided a strong foundation for their own planning. While some students were seeking to improve their own learning approaches, they reported very few instances of online STEM faculty providing guidance or advice on topics such as time management, notetaking, or study strategies.

3. Instructional practices affect help-seeking among students.

Seeking help is a critical applied learning process. Students who ask for help when they need it are able to identify when a problem requires additional assistance or resources, and they are able to take action to obtain the help they need (e.g., by asking a question, attending office hours, or going to tutoring) rather than giving up or working less productively alone.

Most students we interviewed identified barriers to help-seeking in online courses, including fears of being perceived as unprepared by instructors and assumptions that students should figure it out for themselves. Students were also influenced by previous discouraging help-seeking experiences, such as slow-to-respond or nonresponsive instructors and instructors who displayed indifference to students' personal circumstances. These challenges, which may manifest in all course modalities, were acute in their online courses, which did not offer many opportunities to connect formally or informally in person. For example, one student explained they had trouble scheduling a virtual meeting with an instructor:

> I tried meeting with my professor, and I do not want to bash him at all, but maybe he has stuff on his plate or something. And I was like, "Hey, I'm trying to meet, like, I don't want to start doing the work until I know that I'm actually doing it correctly." Because if I'm not, then I don't want to do it. I tried meeting with him on two occasions. In the first one, he just didn't show up to the ... call. Yeah, yeah. Maybe you forgot. I don't know. So then that just set me back another week.

Students also shared concerns that seeking help would reveal unpreparedness, and they pointed to unique vulnerabilities related to seeking help in online courses:

> *On campus, I can speak to my professor, and I feel comfortable doing that. Online, it's probably a little bit harder for me because ... it's like sending a risky text to somebody you like—you don't know what they're about to say. ... "Well, you should know this already."*

> *I have a professor [who] just says, "Please send me an email; I'm very busy." That kind of makes it uncomfortable because you're like, okay, I can reach out a lot, [but I feel] I have to figure it out on my own.*

Students also reported heightened barriers to peer-to-peer help-seeking in online courses. Very few students in our sample had developed relationships or sought help from other students in their fully online courses:

> *And they'll tell you, "Reach out to another student." And I'm like, "I don't know these people. ... I'm not gonna reach out to them." ... And then at the end, they're like, "Okay, now form a group and do one project together." And we're like, "Nobody knows each other." It's so weird.*

While these challenges were common, several students also commented on instructional practices and faculty behaviors that mitigated them and promoted help-seeking. Namely, more instructor-to-student interaction increased students' comfort seeking help. Even in asynchronous courses, some students described optional virtual meeting times that provided opportunities to build relationships and trust with the instructor:

> *So having ... four [meeting] times throughout the semester ... with my professor was really good, especially for me, because I need letters of recommendation. And you can't really get a letter out of someone who doesn't know you at all because all you do is submit homework. ... And I was also really lucky because we clicked.*

In lieu of one-on-one meetings, either virtual or in person, students reported some examples of technology-mediated opportunities to connect that promoted help-seeking. In one case, the instructor used a web-based platform to facilitate a running comment thread that students could contribute to as they viewed the lecture video. Students used the platform to post weekly reactions to video lectures and to comment on one another's posts. One student found these interactions and their frequency beneficial:

> *I enjoyed [the video lectures and the web-based comment thread], and I felt like I followed along more, and I felt like I understood more. And [the instructor] was easier to talk to because I see him [online, in videos] every two days out of the week. And the accountability was there. I felt like I was actually in school, and it wasn't just on my own time—and not only that, but just being able to not be shy to ask him any questions. There were even times when I had to go to his campus to see him, and it was just a lot easier.*

Students also reported that the substance of their interactions with faculty was important. Encouraging faculty feedback and affirming support often led to additional effort by students and was influential in their future help-seeking behavior. If they received timely, useful feedback, students said they were more likely to seek help again:

Reaching out to him was so helpful because when I asked for feedback ... he was so thorough, and I ended up being able to add, like, two extra paragraphs just based on what he had said in feedback, which was just, like, five bullet points, but, it makes such a big difference. You have to have self-confidence. And you have to be your biggest advocate to be able to be in an online school. Honestly, you just have to be able to push yourself and trust yourself that you can do it.

Another student pointed to the helpfulness of synchronous class meetings as well as a faculty member's positive responses to interaction with students:

I feel like he is happy when we go ahead and ask questions ...One thing that he does which helps [is having] online live class [meetings]. ... [We] discuss things we don't understand. ... I've been to two already, and it's been helpful because you get to even chat and speak and see him explaining things on the board. So that's good.

These reflections suggest that it is beneficial to open new channels for social interaction in which students can ask for clarification and support from one another and their instructor. While many students preferred seeking help in person, students also shared positive experiences in asynchronous environments that made it easier for them to ask for help. Interviewees appreciated frequent structured opportunities for asynchronous and synchronous interactions with faculty and peers (e.g., virtual one-on-one or group office-hour sessions) as well as timely and encouraging responses from faculty.

4. Students bring prior strengths that support SDL skill development.

In reflecting on their experiences, students in our sample not only described circumstances that suggest opportunities for improving online teaching in ways that promote SDL development, they also revealed key personal strengths, including a strong motivation to succeed in college, a tendency to apply learning practices acquired in other contexts to their online STEM courses, and a notable resilience in the face of setbacks. These strengths can serve as a foundation to continue to build motivational, metacognitive, and applied learning processes that foster success in online courses.

Students frequently talked about the family and community supports that motivated them to succeed in college. In some cases, parents and older relatives served as role models or a source of inspiration. In other cases, students were motivated by siblings or friends who were supportive:

I'll pass the index cards to my sibling. And as I'm sitting down, I'm looking away from her, and I have her sitting behind me, and she'll be like, "Okay, what is three negative ... ?" and I'll tell her, and she'll say, "Okay, you were right," or "We have to come back to this," and we'll shuffle it around, back forth, forth back…. And I'll do that for studying.

Additionally, students were motivated by the desire to make their caregivers proud. For example, one student said,

Both of my parents are very intelligent, and they're very educated, and they're very successful. So, I want to ... make them proud. I mean, they're going to be proud of me as long as I'm happy. But ... I do want to achieve something.

As noted above, some students had demotivating experiences in online STEM courses, including feelings of isolation, negative experiences seeking help, and frustrations with using course resources. But students also had motivational reserves to draw on in the form of family, community, and aspirations for success.

Students also brought learning strategies they developed in high school and elsewhere, including approaches for notetaking, memorization, test preparation, and time management:

And I would have to say my organization as well as my time management [are helpful]. ... Truthfully, I developed these skills ... through classes in high school, such as economics class, AP government and politics, leadership, robotics, ... as well as book club.

I'm about to enter a peer mentorship program, and things that I want to help other people with are knowing proper notetaking techniques and how to do things in an efficient way that works best for you. Not everybody's going to study or take notes in the same way. But I had to learn pretty quickly how to take notes and manage my time so that I could get everything done.

Finally, students described their resilience in overcoming setbacks and challenges. In some cases, negative experiences that might have derailed a student's plans became highly motivating. One student conveyed that their having received a rejection letter from a competitive program motivated their strong academic performance in the current semester as they worked toward reapplying. In other cases, students drew on their resilience to overcome threats to their confidence. For example, one student shared how they changed their perspective and their study habits after receiving lower grades than expected on the first few exams:

[I knew] I studied enough that I could feel a little more comfortable within my ability to take [the fourth exam]. I was kind of looking forward to what grade I would receive. And it was just overall like an uplifting moment where it's like, "Okay, I think this is one of my better ones. I think I have this. Mentally, I understand the materials; I think I can do

this." And if it doesn't work out, at least I know for the next time, if I have to retake, how I need to do it, and who I need to do it with, et cetera. That kind of mentally, "Okay, I can do this. I belong here."

In sharing these perceptions and brief stories with us, students showed that they had a variety of motivational resources at their disposal. They spoke about their confidence, resilience, and inclination to reflect on and learn from previous challenges.

Conclusion and Recommendations

In our interviews with students, we found that online STEM courses present challenges that are distinct from the challenges students face in in-person courses. In online courses, they experience greater isolation, which can decrease their motivation. What is more, while the learning materials available in many online courses are plentiful, students often are unsure of the best way to employ those resources, and many find that their previous learning strategies are insufficient in the online STEM context. And in part because of limited interactions with instructors and peers in online courses, they may also experience difficulties in seeking help when they need it. Nevertheless, in responding to these challenges, many students bring with them strengths that can help them stay motivated and adopt new learning strategies.

We intentionally asked students about learning skills and developmental processes that have previously been identified in research on online learning. Processes described in the Collaborative's SDL framework are thought to work together to support student success. Motivational processes cultivate useful foundational emotions and beliefs for learning (e.g., a sense of belonging and confidence), even under challenging circumstances. Metacognitive processes, which include identifying needs and reflecting on one's situation and potential resources, harness those positive emotions and beliefs to formulate plans. Students put plans into action by employing applied learning processes such as seeking help and using effective strategies. Finding success with these strategies feeds into motivation, and the cycle continues. Across the four themes described above, we see these interrelated processes play out in practice. Students who have frequent and constructive interactions with peers and faculty feel more motivated and express more willingness to seek help. Positive experiences provide opportunities for students to reflect on their learning strengths and needs and adopt new learning strategies. This may feed a virtuous cycle of confidence, increasingly effective approaches to online learning, and success.

Based on interviews with our sample students about their online coursetaking experiences and especially about what instructional strategies worked well for them, we offer faculty the following recommendations to build students' SDL skills in online courses:

1. **Uncover and acknowledge students' SDL strengths** through reflection and application. Create opportunities for students to reflect on the knowledge, skills, and resources they bring to their online course. These include metacognitive and applied learning strategies learned previously as well as sources of motivation and resilience. Provide opportunities for students to share these strengths with one another. Invite students to apply unfamiliar skills in structured ways—for example, by trying out a learning practice and reporting on how well it worked. Reflection and discussion prompts may include: *What keeps you motivated when you encounter challenges in college? What community, family, and cultural resources lift you up? What are strategies that you use to help you stay on track in online courses? What would you recommend to your classmates?*

2. **Prioritize instructor-to-student connection** to lower barriers to help-seeking and to promote motivation, confidence, and belonging. Host virtual office hours and build other opportunities to interact with students one-on-one or in small groups. Communicate care for students and belief in their ability to succeed; look for occasions to reach out before challenges arise. Send messages that make clear that help-seeking is normal, expected, and encouraged. Consider requiring or incentivizing attendance at virtual office hours during the first few weeks of class. Use multiple approaches to connect with students, including emails, synchronous meetings, video messages, and other communication channels such as discussion boards.

3. **Create varied and frequent opportunities for student-to-student interactions** beginning early in the term. Share goals and the rationale for these activities with students, noting, for example, that research shows the benefits of peer engagement[19] as well as the risk of feeling isolated in online courses. The benefits of peer-to-peer interaction include learning from one another about how to stay motivated and about ways to approach learning in online courses. Set norms for building and maintaining a positive learning community by creating roles and responsibilities for collaborative work. Interactions may occur through text or video on discussion boards or other virtual collaboration tools, at synchronous meetings, or via group assignments.

4. **Help students navigate course resources, activities, and assignments** for optimal learning and success. This may include discussing ideal workflows for reviewing videos and other content, creating opportunities for students to share resources that they find useful (including study guides, summaries of important course content, and schedules they use to manage their coursework), estimating the amount of time it may take to complete assignments, and suggesting strategies to prepare for exams. Use clear and predictable course structures and deadlines; for example, consider a consistent day of the week for deadlines. After assignments and assessments, invite students to reflect on what learning strategies worked well and what they may want to improve on for next time.

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Acknowledgments

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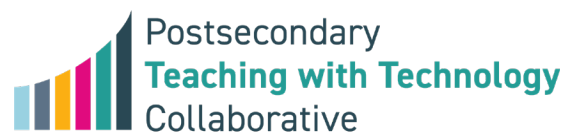
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