

Using Metacognitive Prospection to Understand, Promote, and Assess Undergraduates' Self-Regulated Learning Strategies

Cynthia Stavrianos

Gonzaga University

Abstract

Self-regulated learning (SRL) is a beneficial skill for college students to develop and is an important step on the path to lifelong learning. Instructional techniques like flipping the classroom and project-based learning are proven to foster SRL, but wholesale transformation of traditional lecture and discussion-based courses is not always feasible or desirable. This article introduces metacognitive prospection, an easy-to-use instructional method for fostering and applying SRL skills, and reports on the results of using the technique across four sections of an introductory-level college course at a small, liberal arts college. Results indicate that students exposed to this technique are able to identify weaknesses in their learning behaviors and develop effective adaptations for future learning, with nearly half indicating they will employ agentic learning strategies in the future.

Keywords

metacognitive prospection; self-regulated learning; agentic learning; claiming an education

The first thing I want to say to you who are students, is that you cannot afford to think of being here to receive an education; you will do much better to think of yourselves as being here to claim one. One of the dictionary definitions of the verb “to claim” is: *to take as the rightful owner; to assert in the face of possible contradiction*. “To receive” is *to come into possession of; to act as receptacle or container for; to accept as authoritative or true*. The difference is that between acting and being acted-upon.

—Adrienne Rich, *Claiming an Education*, 1977

Introduction

Nearly 50 years have passed since Dr. Adrienne Rich implored students in the incoming class of Douglass College to see themselves as active and agentic participants in their journey through college. Rich presaged by at least a decade educational researchers' calls for students to become

what a large body of literature now calls *self-regulated learners* who thoughtfully examine their educational processes and exercise control over their own learning. One of the earliest and most prolific authors in this influential and still growing field, Barry Zimmerman, echoed Rich when he identified self-regulated learners as those students who “view ... academic learning as something they do for themselves rather than something that is done to or for them” (1998, p. 1).

Self-regulated learning is an important step in the journey to becoming a lifelong learner (Taranto & Buchanan, 2020). Lifelong learning is advocated by both educators (Eschenbacher & Fleming, 2020) and, increasingly, employers (Perna, 2023). College is a pivotal point for the maturation of self-regulated learning (SRL) skills where students require support to transition effectively from the highly directed high school environment and become self-regulated learners (Beaumont et al., 2016; Vosniadou, 2020). University instructors who are committed to encouraging students to develop the SRL skills necessary to claim their college educations and become lifelong learners have advocated for the adoption of teaching and learning techniques such as flipping the classroom (Blau & Shamir-Inbal, 2017; Zheng & Zhang, 2020) and problem- or project-based learning (PBL) (Loyens et al., 2008). Though effective, strategies like these are time-consuming for instructors to adopt and can seem daunting to faculty already stretched precariously thin.

This article introduces metacognitive prospection, a course scaffolding strategy and set of writing assignments that enable instructors to understand their students’ ideas about effective SRL behaviors and promote and assess key self-regulatory skills and processes. While improving students’ SRL skills has been shown to boost students’ academic performance, many instructors may lack the time or resources to restructure an entire course by flipping it or transitioning to PBL-based instruction. The technique discussed here, which I call metacognitive *prospection* to emphasize its forward-looking orientation, can be slotted into existing traditional courses and provides students the opportunity to develop the key SRL skills of forethought, self-evaluation, and adaptation (Zimmerman, 2000). In addition, the narrative format of the culminating assignment, which asks students to prospectively apply the learning insights and skills they have developed in the current course to future learning situations, offers instructors a more nuanced view of student learning strategies than is possible with other common SRL assessment instruments, such as the much-used Motivated Strategies for Learning Questionnaire (MSLQ). Results from the use of the metacognitive prospection technique over four sections of an introductory-level political theory course demonstrate that students exposed to this technique envision themselves taking specific steps towards claiming their education more effectively in the future, with nearly half of all students reporting they intend to become *agentic learners* who go beyond simply completing the required work in their courses.

Literature Review

Self-regulated learning began receiving considerable attention in the latter half of the 1980s (Pintrich, 1989; Zimmerman, 1986). As defined by Pintrich (2000, p. 453), self-regulated learning is “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment.” Over time, researchers have proposed many different models for describing and analyzing the key components of the SRL learning process, but the six most influential models (Boekaerts & Corno, 2005; Efklides, 2008;

Hadwin et al., 2017; Pintrich, 2000; Winne & Hadwin, 1998; Zimmerman, 2000) agree on many broad points (Panadero, 2017), three of which are relevant to this investigation.

First, all see the SRL process as consisting of a preliminary preparatory phase in which tasks are analyzed and goals are set, a performance phase in which the task is completed, and an appraisal phase “in which the student reflects, regulates and adapts for future performances” (Panadero 2017, p. 18). Next, all see the SRL process as a cyclical one with the insights of the appraisal stage being applied to future instances of task evaluation and goal setting. Finally, the dominant SRL models all identify metacognition as a crucial component of the SRL process. A commonly invoked general definition of metacognition is “thinking about one’s thinking.” More specifically, metacognition involves both knowledge about how one thinks or learns and strategic use of that knowledge to refine goal-seeking behavior and evaluate when the goal has been met. Of the leading SRL scholars, Winne is most emphatic about the primary role metacognition plays in the SRL process, describing metacognition as “the engine of self-regulated learning” (2022, p. 773) and identifying (with his coauthor) “metacognitive monitoring” as the “gateway to self-regulating one’s learning” (Winne & Perry, 2000, p. 540). Zimmerman shares a similar outlook about the centrality of the learner’s awareness of their own learning in SRL, writing, “in terms of metacognition, self-regulated learners plan, organize, self-instruct, self-monitor, and self-evaluate at various stages of the learning process” (1990, p. 185).

Studies have found that the cycle of SRL can yield very positive outcomes: Students with strong SRL skills have been shown to be more actively engaged in the learning process (Vrugt & Oort, 2008) and to have higher levels of academic adjustment (Cazan, 2012) and academic achievement (Kitsantas et al., 2008). However, the outcomes of the SRL process are not always positive or beneficial to students. SRL can lead to detrimental adaptations in learning processes, as when students’ regulative responses include avoidance strategies such as feigning illness, disengaging from course materials, cheating, or other maladaptive responses to their academic experiences (Boekaerts & Corno, 2005; Deed, 2011; Panadero & Alonso-Tapia, 2014).

These theories and models of SRL have informed instructional practices at every level of education from preschool (Dörr & Perels, 2019) through to graduate education (van Houten-Schat et al., 2018). While specific instructional techniques of course vary according to educational levels, students at every level must have wide latitude to manage their own learning. Nevertheless, instructors have an important role to play in fostering SRL skills. Educators seeking to assist their students in the journey to become self-regulated learners should position themselves as facilitators of inquiry rather than simply providers of content (Oates, 2019). Practices proven to assist in this development include scaffolding learning opportunities to progressively guide students towards SRL acquisition (Blau & Shamir-Inbal, 2017), providing robust and regular feedback (Russell et al., 2022), encouraging reflection and self-assessment (Kennedy et al., 2019), and modeling self-regulating strategies (Oates, 2019). In sum, the traditional lecture-based teaching model of instruction is critiqued as not providing sufficient opportunities for the development or practice of SRL because lectures alone do not accomplish these tasks. Therefore, many studies advocate transforming lecture-based courses into student-centered learning spaces by flipping the classroom or turning to problem- or project-based inquiry.

With faculty reporting unprecedented increases in workload, stress (Tugend, 2020), and burnout (Marken & Agrawal, 2022) over the past few years, instructors may be rightfully resistant to making such fundamental and taxing curricular changes at this moment.¹ However, given the convincing evidence that SRL benefits students, finding methods that can be woven into existing courses without wholesale curriculum change is warranted. For instance, research over several decades has documented a positive association between students' use of SRL skills and academic achievement and grades (Broadbent & Poon, 2015; Nota et al., 2004). In addition to this end-stage benefit, studies have also found that self-regulated learners demonstrate enhanced academic motivation (Pintrich, 2003), report lower levels of procrastination (Corkin et al., 2011), enjoy and feel less bored about learning (Karlen et al., 2021), and actively claim their educations by doing such things as seeking supplementary sources to aid content comprehension (Clarebout et al., 2010). For the 50% of faculty who reported decreased enjoyment in teaching over the difficult year of 2020 (Tugend, 2020), having a classroom of students who are excited to learn and actively engage during class, and seeing these benefits in students, may bring back some joy in teaching. In addition to benefiting students, then, improving SRL skills may improve upon faculty job satisfaction.

Case Study: Metacognitive Prospection and SRL Development in an Introductory Political Theory Course

I used the opportunity of launching a new course to incorporate metacognition into my curriculum. I was tasked with teaching an introductory course in political theory (POLS 102) upon the retirement of a colleague. Though I regularly teach an upper-division course in the field, it had been nearly two decades since I had taught introductory content and then only as a teaching assistant, not as the instructor responsible for content and assessment design. I designed POLS 102 as an interactive lecture and discussion-based course in keeping with the instructional style most common at my small, liberal arts institution. In the pilot year I was interested in 1) calling students' attention to the distinctive method of thinking theoretically about politics, 2) motivating students to engage with material that many previous students had experienced as challenging and/or dry by encouraging metacognitive reflection on the learning process,² and 3) assessing the course to modify and improve it for subsequent offerings. I had some previous experience talking informally with students about metacognition and believed I could use this concept to advance these three goals; therefore, I developed a framing and scaffolding approach designed to foster metacognition about learning and encourage students to apply that skill to producing useful course feedback.

This is how the process unfolded in POLS 102: To frame metacognitive awareness as a skill we would work to develop in the course, I presented the first sentence of the Adrienne Rich quote that serves as the epigraph for this article to students on the first day of class. I then asked students to get into small groups to discuss what they thought Rich meant by the distinction between receiving and claiming an education. After 5-10 minutes, the whole class reconvened to share out the

¹ In fall of 2020, 82% of women faculty and 70% of men faculty surveyed by *The Chronicle of Higher Education* reported that their workload had increased since the start of the year and 69% of faculty reported feeling extremely or very stressed, an increase of 38% over the fall prior. In February 2022, Gallup found that 35% of college and university employees feel burned out at work very often or always.

² Based on my impression of comments shared in oral exit interviews with seniors in the major over many years.

perspectives that emerged from the small group work. As soon as the class developed a definition similar to Rich's, I displayed the remainder of the quote to show them they had evaluated her meaning correctly. I then asked them to take the work further and offer some concrete examples of actions they had taken in the past that could be categorized as claiming rather than receiving an education. Finally, I asked students what they might do during our semester together to claim their education in POLS 102 and used this moment to draw attention to the challenge of reading and analyzing political theory. This first-day exercise allowed me to weave the framing of actively claiming an education through the remainder of the semester and encourage students to see themselves as active participants in the educational process.

A series of three writing assignments formally scaffolded the metacognitive work of the course and amplified the theme of claiming an education. This metacognitive work was inspired by writing instructor Gillian Parrish's (2016) method of creating what she calls a "metacognitive pause" at the midway point of the course with a midterm evaluation assignment. The POLS 102 assignments, originally presented on the syllabus as "metacognition and feedback assignments" and later rechristened "metacognitive prospection assignments," were low-stakes (graded as submitted or not-submitted) and evenly spaced throughout the semester. The initial assignment came during the first week of the course and asked students to discuss why they chose to attend college and consider how they would use POLS 102 to help them achieve the learning goals they had for themselves. The second came just after the midpoint of the semester and invited students to consider how they were experiencing various facets of the course and offer recommendations that could improve the second half of the course. In the final assignment, which was completed in the last week of the course, I asked students to think about how they would continue to claim their education in future courses. Students received feedback on each of these assignments to support and encourage their continued metacognitive awareness.

To further encourage students to think about their thinking, I made frequent mention of metacognition during classes and modeled metacognitive awareness by thinking aloud in response to their questions about course material. In addition, I regularly reminded students to think not only about *what* they were learning but also *how* they were learning. For instance, during one class discussion I asked students what kind of instructor feedback helped them improve their performance and what kind they found less useful. Students responded that low letter grades sometimes led them to disengage with course material and give up trying to understand it. This led to our decision to change some course assignments from graded for content accuracy to assessed by the number of reading response questions submitted over the semester, thereby providing students the opportunity for self-regulation and rewarding increased engagement with the material. In sum, the metacognitive prospection writing assignments and supportive framing introduced many of the key elements of SRL into the course including, for students, scaffolded moments for metacognition and multiple opportunities to receive and give feedback and, for the instructor, opportunities to model and facilitate development of effective learning techniques and to give and receive feedback.

After the end of the academic year, I reread all the metacognitive assignments submitted by students across the four sections of POLS 102 as part of my assessment of the pilot year of my new course. It became apparent to me at that point that POLS 102 students were engaging in the cyclical and developmental process of self-regulated learning. After a semester of being

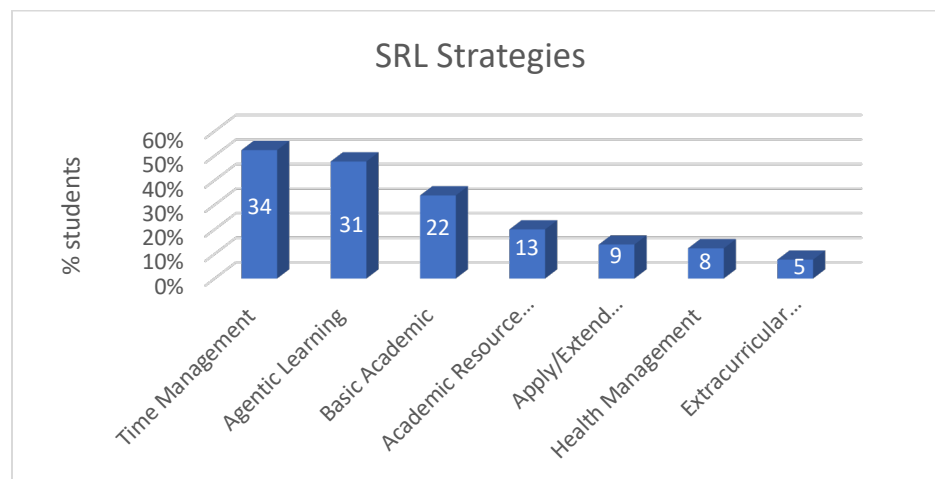
encouraged to engage in forethought and self-evaluation through metacognitive assignments and discussions, students prospectively applied the lessons they learned about themselves to identify beneficial (for the most part) adaptations they would make to improve their learning processes in the future.

The remainder of this article focuses on analysis of student responses to the following question (from the final course metacognitive prospection assignment) to illustrate the varied SRL skills students identified as useful for their future learning and provide recommendations for how instructors can use this technique to iteratively foster beneficial SRL skills among their students:

On the first day of our class, I urged you to think about being at [this college] to claim your education (rather than simply receive it). Based on your evaluation of your own experience and performance as a student this semester, **write down two or three practical and specific things you could do next semester to claim your education even more effectively.** I suggest you save this advice to yourself and take a look at it again at the beginning of next semester.

Sixty-five of 77 students across four sections of POLS 102 submitted responses to this question (84% response rate). Qualitative inductive analysis of these data was performed for this exploratory research resulting in the identification of seven themes in students' learning advice to themselves. The number of students mentioning each learning strategy theme is displayed in Figure 1 and the strategies are discussed below in order of most to least mentioned. The total of strategies graphed exceeds the number of students as the prompt calls for two or three strategies. The average number of strategies mentioned per student was 2.5. Below I identify the seven themes and share representative comments to illustrate the valuable information that instructors can expect to glean when using this metacognitive prospection technique. As readers will see, students were able to self-identify weaknesses in their learning behaviors and generate appropriate learning adaptations to address them, strongly suggesting that this simple prompt engenders SRL skill development.

Figure 1



Time Management Strategies

The most frequently identified “practical and specific things” students mentioned in their responses can be categorized as *time management strategies*. Slightly over half of respondents (52%) reported they believed greater attention to time management would enable them to claim their educations and further their academic goals more productively in the future. Ten students specifically mentioned they would use either a *planner* or *calendar* in the coming semester, indicating that students were thinking very concretely about how to manage their time. Some, like this student, reflected on how use of a planner or calendar would help them keep on top of due dates and workflow:

Some advice I would give to myself is to always know what assignment is coming up and when its due. I totally screwed up this semester by not writing down my assignments and mixing up dates with a lot of classes. The second piece of advice I would give myself is to use a daily planner to write what I have to do each day.

Others were interested in managing their time to create a better work-life balance for themselves, such as this student who hopes to carve out time for socializing in the evenings by devoting daytime hours to study and sports:

My second goal is to be better at time management in general. I am usually pretty good about it, as my days are so busy with [athletic team] practice and school, but I want to spend more time studying during the day so I can focus more on myself and my friends at night.

A small (N=6) but noticeable number of students specifically reflected on their past difficulties with *procrastination* or *procrastinating* and discussed the steps they take in the future to overcome this tendency:

The other thing I want to work on is being able to manage my time more when it comes to writing assignments. I think I’ve gotten overly confident in my ability to write fast and this has caused me to procrastinate a lot more when it comes to assignments like essays. So planning out when I start them and giving myself enough time to do them so I’m not stressed will definitely help me better claim my education.

Agentic Learning Strategies

To my delight, nearly half of respondents (48%) foresaw themselves taking steps to claim their education beyond fulfilling the minimum required work in courses. I categorized these behaviors as *agentic learning strategies*. That is, students reported planning to engage in learning behaviors over and above simply doing the required reading, turning in assignments on time, and attending class regularly. A frequently identified strategy that fell into this category was committing to active participation in classes by asking questions or contributing to discussions. One student discussed a personal impediment to participating they experienced and expressed a desire to overcome it: “Being a bit more comfortable in asking question could help me understand what I’m learning

better, since I'm a bit shy." Another student considered their challenges at greater length before noting their strategies for claiming an education in spite of them:

To further claim my education, I believe that it would be beneficial for me to work on procrastinating my homework a little less and making sure that I ask questions.... In terms of making sure I ask more questions in class, I think that would help me claim my education because I would be actively trying to broaden my understanding of topics. I am usually confident in answering questions that professors pose, but I do not often feel comfortable asking them questions since I am afraid that the question could be redundant or unnecessary.

Lack of confidence was also identified as an impediment to active involvement by others, including this student who committed to participating and not letting the fear of being incorrect inhibit them:

I think a really good way for me to better claim my education would be to participate more in class and have my voice heard by raising my hand and contributing to the conversation. I feel like if I spoke up more in class, even if I was wrong, I would be able to make sure I understand the material fully and correctly as well as share my ideas that could help a classmate.

Several students planned to set themselves up for success by actively managing the times of their classes or the time and place they study to get the most out of their learning experiences. One wrote:

I want to find a set study spot, this year I was bouncing around different places and I found that I often would become distracted, and I wasn't getting more work done as efficiently as possible. Next semester I want to find a quiet set spot that I know I can go to, sit down, and get my work done without any distractions.

Another simply said they would, "Set aside a block of time (at the same time) every single week to just check up on coursework and do homework" and "keep my desk cleaner so I am more encouraged to sit there and work."

Another agentic learning strategy proposed by several students, represented by the comment below, involved being thoughtful about selecting classes or disciplines that interest them and, therefore, maximizing their motivation to work and learn:

This semester was a hard one for me. I lost my way countless times, but I think I have began to understand first hand how I want to claim my education. POLS 102 was my only class this semester where I enjoyed what I was reading and where I felt excited about my education. I thought I wanted to be a [redacted] major, but I am changing my major to political science. I want classes that are based around discussions and not hour long lectures of numbers being written on white boards. I want to stay in touch with my love for social justice and writing. This class and your teaching style have taught me not just how to claim my education, but the education I want to claim.

Similarly, another student developed a strategy for maintaining motivation when they had to take required courses of lower intrinsic interest to them in the future:

My advice to myself is to look at school work as more of a choice rather than a task.... I want to claim my education, and the best way to do that is by putting all my effort into it. My second piece of advice is being patient, I have a lot of core to take and I know I am going to get bored not being in as many poli sci classes as I would like to be, so being patient and understanding that I have to do this to do the fun stuff (poli sci classes) is important.

A final notable agentic learning strategy found in the above comment as well as the following ones involved changing one's orientation or outlook towards learning in productive ways. The student below recalled a time during the semester when they had asked for academic assistance and noted that they planned to reframe the way they think about help seeking behavior as a result of their experience:

I had previously put up a roadblock of sorts in my mind, keeping myself from asking for help. I would like to eventually get past thinking that utilizing my resources is selfish and inconveniences others. Ultimately, I would like to claim my education by not being afraid to ask for help.

In the same vein, one particularly thoughtful student discussed their practical strategy for staying academically engaged during summer months before sharing their plans to reorient their thinking about required courses:

As we discussed at the beginning of the semester, to claim one's education is to throw oneself into it with gusto and vigor. It is impossible to claim one's education passively, instead it requires effort, investment, and most of all interest. Based on these tenets of claiming an education, I would say that there are a few things I could do to better claim my education next semester. The first of these new approaches would be to hit the ground running. Whether that means reading some books for fun over the semester or taking summer courses, it is important to warm up the brain so that way when we get back to campus, I will not be walking into my first day of class having not been intellectually challenged in the last four months. The second thing I could do to claim my education more effectively is to take an interest in whatever I am learning. Many students, when it comes to core classes, simply go through the motions, just trying to tick the box and move on. Your education is more enjoyable and more valuable when you make an effort to make each class interesting to you. If you are not interested in religion but have to take religious studies courses, do not focus on the fact that you are not interested in the subject, instead focus on how this new class can make you better at understanding political science.

Basic Academic Strategies

Roughly 1/3 of students counseled their future selves to do the basic work required in courses thoughtfully and on time. Academic strategies that called for attention to the fundamental

requirements of courses were coded as falling within the *basic academic strategies* theme, including doing all the assigned reading, taking notes in class or on the readings, studying for exams, and attending class regularly. The following three comments typify those grouped in this theme:

[1] I would suggest to my future self to take more time with the readings to fully understand it because sometimes I would just read it not understand it and hope it was covered in class.

[2] I am going to be stricter with myself about reading. This semester I just felt overwhelmed by reading in all my courses, but it has allowed for me to better manage my time. With this in mind, I will be more prepared for next semester. Along with reading, for next semester I plan on taking more thorough with my notes through out the semester to better prepare for my class finals. This kind of goes hand in hand, but also studying more throughout the semester as well.

[3] Take more notes during class it does not hurt to do so. Take every single class seriously as it does not mean it is easy you will keep a good grade. Lastly, stay on top of your required readings I know it can be a pain but in all it is worth it.

Academic Resource-Seeking Strategies

One-fifth of students committed to seeking out and making use of campus academic resources in coming semesters. Most of these were students who were going to proactively visit professors' offices to make connections or request help. Typical of these comments was:

I could also take more advantage of office hours. It's very rare for me to go to office hours but in the times, I have gone it has been extremely helpful, or even reaching out more to professors in general to ask for help. I once asked a professor if they could look at a draft of a paper for their class and they said, and their feedback was tremendously helpful. I have usually been too hesitant to do this in the past, but now I think I will be better about reaching out to professors for help.

Another subset of students committed to making use of the campus writing center, which offers drop-in tutoring and proofreading of academic essays. The following student planned to engage in both of these commonly cited behaviors:

The first thing I would like to do to claim my education is utilizing my professors' office hours. I often feel I am inconveniencing my professors when I come to them for help, but I know that they offer office hours for a reason and shouldn't feel wrong about utilizing this resource. Secondly, I would like to start using the writing center.... I had never been to the writing center until this past week. I went because it was required for a class, but it was incredibly beneficial. I left wishing I had used the writing center for every essay I had written this year. I had previously put up a roadblock of sorts in my mind, keeping myself from asking for help. I would like to eventually get past thinking that utilizing my resources is selfish and inconveniences others. Ultimately, I would like to claim my education by not being afraid to ask for help.

Apply/Extend Knowledge Strategies

Fourteen percent of students envisioned claiming their education by applying or extending the knowledge they acquired in POLS 102. Specific behaviors identified for doing this included talking with others outside of class, making connection between POLS 102 content and the content of other courses, and applying course knowledge to understand and analyze real world events, as illustrated in the following exemplar comments from three students:

[1] Next semester I could work on connecting with my fellow classmates outside of class. This could help me grasp my education better.... I could also work on applying what I learn in my courses to my life, by relating what I learn in my classes I can claim my education better.

[2] I think that applying things I've learned in my classes to outside of my classes could help me continue to strive to be smarter in every aspect of my life. Instead of trying to learn for the sole purpose of passing a class, this can help one think critically about all things and learn from that thinking, and then grow as a person. I can also take handwritten notes more often. Although I have bad handwriting and the notebooks are harder to organize than google doc, writing things down helps me absorb the information more.

[3] A way I could claim my education is by trying to understand what the objective of the lecture is before it starts, and after the lecture is over review if I fully understand the objective or not. Another way I can claim my education is by trying to relate the information I am learning to other classes or to things in the world that are important to me.

Health Management Strategies

Eight students mentioned needing to care for their physical or mental health in order to claim their education. Although a small share of students (12%), students who planned to be more attentive to their health in future semesters offered interesting insights on the connections they see between health and learning. Some, like this student, reflected on the linkage between sleep or rest and learning:

Some practical things I could use are time management, create a sleep routine, and rest without guilt. These factors could help aid my performance and hopefully a more in-depth experience.

Others saw connections between their physical health and their ability to do their best academic work, as this comment illustrates:

One of the things I am doing next semester to claim my education is quitting my job. This sounds very paradoxical, but I've found that I need that time to put more effort into my studies and my mental and physical health. Therefore, next semester I will be spending more time in the gym and doing restorative activities in order to be more equipped to learn my best.... I'm trying not to think that I'm here for a degree, but that I'm here to learn more and be better equipped for adulthood.

Another thing I'm going to do is carry around healthy snacks.... By having a diverse and nutritious diet, I will be able to focus better, retain more information, and feel my best.

Rounding out this theme were students who believed being attentive to their mental health would enable them to actively claim their education, such as this student who linked time management and mental health:

Based on my experience this semester, two things I would like to make sure I do next semester in order to better claim my education is to take better care of my mental health, and to keep up with my planner. Actively taking care of my mental health is not something I started doing until a couple of semesters ago, and I am getting better at it as time goes on, but there is always going to be work to do.... Another problem that I have been working on, for almost all of my school career, is time management and organization. I am a person who needs to write everything down because all my tasks get jumbled and overwhelming in my head, so keeping a planner this semester really helped. However, my mental health and keeping up with my planner go hand in hand, as the better my mental health the more I want to use it, and vice versa. These things help me to be in a better place organizationally and mentally in order to put in my best effort toward my education and I plan to keep them up in semesters to come.

Extracurricular Involvement Strategies

A valuable outcome of this exercise for me as an instructor was seeing where students proposed strategies that had the potential to detract from their efforts to claim their education. For example, a small segment of students (8%) said they wanted to get more involved in extracurricular activities, such as joining clubs or volunteering. This student seemed to want to do it in a way that could align with achieving their academic goals: "Next semester I want to become more involved with a club, volunteering, or something of that nature. I believe this would further my education because I would gain more experience in different areas and meet a new network of people and friends." But another student who reflected that they did not always have enough hours in the day to complete all their academic work went on to say that next semester they "want to get more involved in clubs, volunteer opportunities, and other activities on campus." These personal narratives provided a window into moment when some students' metacognition resulted in detrimental or maladaptive learning behaviors and allowed me to see that they had an imperfect understanding of the distinction between academic goals and other goals they might want to pursue while in college. If students are unable to accurately distinguish among types of goals, they will not be successful in allocating their time effectively to the achieve the goals that are most important to them.

Discussion: Metacognitive Prospection as an SRL Promotion and Assessment Technique

I intended for metacognition to be a device to encourage students to become self-aware about the challenges related to reading and doing political theory and also serve as a mechanism for soliciting feedback on a newly developed course and it performed these functions. In addition, the end of semester metacognitive prospection question analyzed here also functioned as an assessment of students' SRL skills. The most commonly used assessment mechanism for SRL skills is the Metacognitive Strategies for Learning Questionnaire (MSLQ) (Roth et al., 2016). Developed in

1991 by Pintrich et al., the MSLQ is an 81-question self-report questionnaire that asks students to rate statements about learning behaviors from “not at all true of me” to “very true of me” on a seven-point Likert scale. The instrument assesses students’ motivation and learning strategies, specifically probing for an array of motivational beliefs about learning, cognitive and metacognitive strategies, and resource management actions in 15 subscales. The MSLQ is a course-specific instrument with questions that ask students to think back on the course and report upon an action they undertook or a belief or feeling they had in the past (e.g., “When I study for this course, I go over my class notes and make an outline of important concepts,” “It is my own fault if I don’t learn the material in this course”). The instrument yields a snapshot of students’ SRL skills in a quantitative report allowing the instructor to rapidly identify the SRL strengths and weaknesses of the aggregate enrollment. Students are typically shown their own results and provided with a set of general tips for understanding and improving their SRL skills.

Research has established that the MSLQ questionnaire is a valid and reliable assessment mechanism (Pintrich et al., 1991). However, its course-specific prompts invite backward-looking evaluation and do not strongly encourage students to apply the results of their introspection to future learning situations. Yet SRL is understood as a cyclical, iterative process in which students adapt and improve their learning process by applying their personally developed insights to future challenges. Ultimately, SRL skills should build to the point that students transition from being self-regulated learners who exercise agency over pursuing the goals set for them by their instructors during their school careers to becoming self-directed learners who set and achieve their own goals in their careers post-graduation. Recent research by Raković et al. (2022) demonstrates that students who are asked to reflect upon past performance and then discuss their plans to adjust their future learning behaviors go on to undertake actions that further their learning and, in turn, boost their performance on future assignments. However, Raković and his co-authors note that metacognitive processes that occur “at the end of the learning cycle where retrospective evaluations influence the planning and enactment that might be observed—and are responsible for improved learning—during future cycles of self-regulated learning” (p. 3) are infrequently observed and analyzed by SRL scholars. The results from my study demonstrate that students can translate their insights into developing specific strategies for improving their learning and envision employing them in future contexts.

Limitations

Given the post-hoc nature and the small scope of this investigation, causality is not proven, and results may not be generalizable. Yet, of the seven themes I identified in my students’ work, the five most mentioned can be mapped onto MSLQ scales, confirming that students were identifying for themselves motivational orientations, cognitive and metacognitive strategies, and resource management strategies that educational researchers identify as central to self-regulated learning. Thus, the metacognitive prospection technique corresponded with students developing impressive strategies for regulating their learning and claiming their education in the future. Furthermore, it yielded explanations in students’ own words of challenges they faced and adaptations they planned to make as a result rather than simple quantitative descriptors of aggregate levels of learning.

Recommendations

Though I developed my metacognitive prospection technique while designing a new course, instructors do not need to develop an entirely new course or undertake nearly as much work as is necessary to flip a course or adopt PBL to use it. Instructors can use this method as a module in an existing lecture or seminar-style course by introducing the “claim your education” or “self-regulated learning” orientation to students through a discussion early in the term, scaffolding this approach using a series of written assignments prompting both metacognitive awareness and forward-looking application, and providing formal feedback about and informal modeling of metacognition over the course of the instructional period. Instructors can tailor the two or three metacognitive prospection questions per assignment to produce feedback that will enable them to assess facets of their course as well as promote productive applied thinking about learning. In my experience, offering feedback on the short written assignments went quickly, and I found it much more enjoyable than assessing work for a letter grade. The metacognitive prospection technique offers instructors a nuanced view of their students’ SRL journey that they can use to tailor future SRL promotion. In light of the themes I identified in my students’ comments, these are some of the actions I plan to take to further SRL skill development.

Deepen Agentic Learning and Knowledge Extension Strategies

The behaviors I coded as *agentic learning* and *apply/extend knowledge* strategies are those that I am most interested in fostering as an instructor. Therefore, knowing that students identify shyness and low self-confidence as impediments to learning, I will build in additional low-stakes opportunities for oral participation in class and coach students to be aware of challenging themselves to build their confidence levels. To reach those who censor themselves because they are concerned they will be “wrong,” I will remind students that there is always value in sharing new ideas or interpretations in the classroom without worrying that they are perfectly formulated because we can work together to refine or redirect them through discussion. To address the difficulty some noted in finding quiet places to study and the benefit many saw in setting up standardized study times, I will compile and share a list of quiet study spots on campus as well as create a weekly study salon for students by reserving a classroom for a two-hour block at a recurring time and informing students that they can use this designated space to study or collaborate quietly with others in the course.

Support Time Management

On my first reading of students’ narratives, I was struck by the sheer number of students who announced their intentions to use a planner or calendar to organize their workload in the future. “Don’t they already do this?” I thought. One student’s narrative helped me understand the issue through my students’ eyes. They wrote:

One practical thing I did to claim my education ... is good time management. In high school, teachers sent multiple reminders about assignments and they told you where you should be in certain assignments. Take essays for example. They assigned an outline, a rough draft, a peer review, etc.... In this way, they ensured that you took the time to form your essay instead of throwing it together last minute.

This has not been the case here. It's been up to me to fit time in for outlines, rough drafts, and even peer reviews.

The overwhelming majority of students in this introductory course (88% of respondents) are first- or second-year students. In the very recent past, teachers and parents likely provided much more direction over my students' time management. Many seemed to be just discovering that they need to take more responsibility over planning their time. Instead of sending multiple reminders or breaking assignments into bite-sized tasks set by me, neither of which would promote *self-regulation*, I will list a paper or electronic planner as a required course material. I will encourage students to read through the syllabi for all their courses during the first weeks of class and record assignment due dates, exam dates, and heavy reading weeks in their planner as well as to note the dates of important extracurricular and family events. This may help them to visualize particularly busy periods and make a plan for completing their work during these times. I will discuss with students my strategy of scheduling subjects I find easiest to teach or using video clips to support instruction during my heaviest grading days and point this out on my syllabus to model this behavior for them. Finally, I will inform the class that previous students in the course suggested that developing a good time and work management strategy would help them avoid stress caused by procrastination and achieve a better work-life balance.

Validate Health Management Concerns

Neither the health management nor extracurricular involvement (discussed below) SRL strategies are captured by the MSLQ. Thus, the final metacognitive prospection assignment tapped ideas about how to successfully claim an education that would have remained invisible if using only the MSLQ questionnaire. Knowing that students struggled to get enough rest and/or sleep, I will encourage students to add adequate time for rest, exercise, and attention to stress and anxiety to their schedules. Though my syllabus already alerts students to campus support services, I will amplify this information by adding a link on my course webpage and introducing the resources in class.

Challenge Maladaptive Strategies

In their recent article about college students' time management and its link to SRL, Wolters and Brady (2021) observe that college students "have both increased opportunities and demands for participation in non-academic pursuits ... that can be detrimental to their academic success and well-being" and note that balancing academics with the "social ... and extracurricular goals students pursue is a primary source of stress and a major challenge for first-year university students" (p. 1320). The narratives shared by my students reveal that some do not fully grasp the distinctions among these types of goals, given that several discussed increased extracurricular engagement as a strategy for claiming their *education* and increasing their performance *as a student*. While non-academic pursuits may certainly be valuable and fulfilling parts of a student's time in college, students will be empowered to make self-regulative choices that enable them to claim their education if they understand the distinctive nature of academic, social, and career goals and recognize there are times these goals can overlap and times pursuing one will require trade-offs with the others. For instance, the student who wrote that joining a club or volunteering might help them further their education because this would enable them to "gain more experience in

different areas and meet a new network of people and friends” may have identified a strategy for effectively meeting both academic and social goals, particularly if the experiences and venues they are envisioning overlap with or complement their scholastic interests. Whereas the student who shared that they did not have enough time to complete their schoolwork but also planned to join more clubs, volunteer, and get involved in other campus activities has proposed a maladaptive strategy that will likely further detract from their time to do academic work.

To enable students to make informed decisions about how to balance the sometimes competing goals they may have, I will facilitate further metacognition about the purpose of college by extending the first day discussion about claiming an education and the related first metacognitive written assignment. I will ask them to consider whether there are social and career goals they would like to pursue while at college in addition to their academic or learning goals and plan for which will take priority for them if time becomes tight. Once students recognize these goals are distinctive, they may be better positioned to identify when and how they can productively interact as well as recognize when pursuing one will require a trade-off with others.

Conclusion

Encouraging and enabling students to foster self-regulatory learning skills pays dividends for students during their college years and beyond by setting them up to become lifelong learners and yielding benefits for instructors as their students become more engaged, active and enjoyable partners in learning. The metacognitive prospection is a simple, readily implemented strategy that instructors can use to bring the benefits of SRL skill development to their students. The scaffolding, series of metacognitive prospection assignments, and feedback mechanisms described here helped students to engage in metacognition and adaptation and to build these skills over the course of a semester. The culminating question about claiming an education gave them the opportunity to imagine with a sense of optimism and agency how they would continue to do this in the future. By asking them to name specific things they will do in the future, the final metacognitive prospection exercise calls on students to set future goals and develop strategies to accomplish them, key tasks in the SRL cycle. Instructors can link the end of one learning cycle to the beginning of the next by encouraging students to save and consult their advice to themselves at the start of the following semester. And by asking students to present their prospection in their own words rather than by reacting to a standardized set of prompts, instructors can access and capture authentic student perspectives and respond to them as they change over time and context and use these to meet students where they are in their self-regulated learning journey.

In sum, the techniques described here offer instructors a manageable and effective way to promote SRL skill development into existing lecture and discussion format courses and reap the benefits SRL provides for both their students and themselves.

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