FACULTY SUPPORTS FOR STUDENT SELF-REGULATED LEARNING:
THE VARIED BENEFITS OF JOURNALING

by
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the degree of Doctor of Education.

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Abstract

To support the distal goal of first-year student persistence in college, I developed an intervention to build faculty capacity to support first-year students with self-regulated learning (SRL) in a first-year experience course. Recognizing that faculty are ideally situated to support SRL (Paris & Paris, 2001), the intervention targeted both faculty ($n = 4$) and students ($n = 3$) in training and ongoing support. Students were assigned a learning strategies module and weekly SRL journal prompts. Faculty participated in 4.5 hours of training on SRL and the use of student journaling as a form of metacognitive monitoring (cf. Fung et al., 2019; Schmitz & Wiese, 2006). Across a few weeks of reflective journaling, two students each reported using strategies from a few SRL categories, indicating room for growth. Faculty reported slightly higher self-efficacy to support SRL, highlighted positive experiences with student journaling and declared plans to carry intervention-related supports into future semesters. Faculty elaborated a variety of benefits for tracking student SRL.

Keywords: college retention; faculty training; journaling; metacognitive monitoring; self-regulated learning; SRL; SRL training; teacher self-efficacy

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Executive Summary

Getting a college degree helps graduates to achieve higher incomes (Haveman & Smeeding, 2006) and healthier lives (Hout, 2012). Dropping out results in lower income in particular for students from disadvantaged backgrounds (Brand & Xie, 2010). I work at State University, a public university in the northeast United States. State University had a below average fall 2019 first-to-second year retention rate of just 69%. The retention rate was even lower for first-generation students at 66% (Office of Institutional Research, n.d.). College retention is a challenge for a substantial minority of students across the United States (Hussar et al., 2020). Students' academic achievement in high school has a strong influence on first-year college GPA (Kuh et al., 2008). Less academically prepared students are at greater risk of attrition in the first year of college (DeAngelo & Franke, 2016; Ishitani, 2006; Millea et al., 2018). My primary role at State University is to provide faculty with pedagogical and technological support. Therefore, I was interested to explore how I could work with faculty to intervene in support of students' academic preparedness with the distal goal of supporting college student retention.

Theoretical Framework

College student retention involves a complex set of factors. Neal and Neal's (2013) networked model of ecological systems theory (EST) provided a lens for identifying and describing the relationships between various systems and factors related to college persistence. According to networked EST, the college student participates in various microsystems, which are settings of social interaction such as specific classrooms, the family, and study groups. For example, faculty support students' self-efficacy and motivation when they create a supportive learning environment (Creasey et al., 2009; Sidelinger, 2010; Trolian et al., 2016). In addition to

direct relationships, such as with professors and parents, the microsystem level also includes the thoughts, beliefs, and behaviors of the individual student. How college students characterize their intelligence and attribute their success in learning relates to their level of interest (O'Keefe et al., 2018), perceived self-efficacy (Macakova & Wood, 2020; McDade, 1988), and academic performance (Macakova & Wood, 2020). Moreover, students who are less academically successful are likely to underestimate academic expectations, feel overconfident, and manage their time less effectively (Morales, 2012). Conversely, self-regulated students who use strategies to engage in learning are more likely to have higher motivation (Ning & Downing, 2010) and achieve higher grades (Pape & Wang, 2003; Tuckman, 2005; Zimmerman & Martinez-Pons, 1986, 1990).

My department, the Education Technology Office, operates at the mesosystem level because we primarily support faculty, but we also interact directly with students to deliver technology orientations and support. Our office's support for faculty occurs at the exosystem level because faculty training does not directly involve students. Finally, the macrosystem level includes broad political, economic, and cultural factors, such as decisions made at the state level to regulate and finance higher education (Mitchell et al., 2017). Although factors such as financial aid and high school academic achievement are important, they are less amenable to an intervention by the Education Technology Office at State University. The intervention study therefore focused on factors related to self-regulated learning (SRL) and engagement with faculty.

Needs Assessment Study

Using a mixed methods design (Onwuegbuzie & Leech, 2006), I examined how first-year students at State University self-regulate their learning and the extent to which professors are

aware of SRL and instruct students on using SRL strategies. In fall 2021, I surveyed 50 freshman students and 15 faculty instructing first-year experience courses. In addition, three faculty participated in semi-structured interviews. Faculty reported teaching their students strategies to complete coursework, but did not characterize components of SRL or describe self-regulation as a process, indicating a gap in faculty knowledge. Faculty's main concern was with student time management. Student data aligned with this concern; no students reported that they distribute their work, few students reported examples of planning, and a few students could not identify any specific study strategies. Faculty in both the interviews and survey frequently indicated that they used journaling to help students reflect on their strategies and to encourage students to generally engage with learning to learn. This finding encouraged me to investigate journaling as a strategy to promote SRL.

Theoretical Framework of Intervention Study

According to social cognitive theory, our sense of agency arises from our actions, our perception of how our actions impact our environment, and from vicariously observing the actions of others (Bandura, 1997). A self-regulated learner participates in three phases of self-regulation, including forethought, performance control, and reflection (Schunk, 2001; Zimmerman, 1989, 2002). In practice, the learner sets goals during forethought, uses strategies and monitors their effectiveness during performance, and reflects on their relative level of success. An important factor is an individual's confidence, or self-efficacy, to perform a task. Bandura (1977) defined self-efficacy as the belief that challenges can be overcome by effort and he described task performance, vicarious learning, verbal persuasion, and emotional arousal as four sources of our perceived efficacy to perform tasks. Faculty are more likely to promote SRL

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with their students if they feel confident supporting students to develop self-regulation strategies and skills (Cleary et al., 2022; Dignath-van Ewijk, 2016; Tschannen-Moran & McMaster, 2009).

Synthesis of Relevant Research Literature

Faculty and researchers deploy diverse approaches to help college students self-regulate their learning. These can be considered in terms of modality, ranging from full semester learning-to-learn courses (Cambridge-Williams et al., 2013) to brief training workshops (McCabe, 2011). Some interventions focus on specific aspects of SRL, such as training on specific study strategies (Häfner et al., 2014) or on staying motivated (Dryden et al., 2021). Fewer interventions focus on the entire SRL cycle (Becker, 2013; Cleary et al., 2017; Schmitz & Wiese, 2006). Journaling and writing diaries have helped college students to improve SRL in contexts as diverse as Germany (Dörrenbächer & Perels, 2016; Schmitz & Wiese, 2006), Jordan (Jado, 2015), Malaysia (Fung et al., 2019), Turkey (Arsal, 2010), and the United States (Terry & Doolittle, 2008). In some cases, researchers measured academic performance, finding that treatment groups outperformed the control groups (Almer, 1998; Arsal, 2010). Most studies used daily journaling (Arsal, 2010; Dörrenbächer & Perels, 2016; Schmitz & Wiese, 2006; Terry & Doolittle, 2008), but Fung and colleagues (2019) showed that a weekly eLearning journal format was able to improve the SRL of 54 second-year undergraduate business students in Malaysia.

Teacher training has helped high school teachers to learn the SRL cycle and its components (Allshouse, 2016; Cleary et al., 2022). Dignath-van Ewijk (2016) found that the most influential direct effect on teachers' promotion of SRL was their self-efficacy. Cleary and colleagues (2022) found that teachers who were most successful in developing skills and positive

perceptions about supporting student SRL were more likely to put their professional development into practice.

Intervention

Faculty participated in three 90-minute training sessions in the first half of November 2022. The sessions were delivered in Zoom and focused on SRL topics such as the three phases of the SRL feedback loop defined by Zimmerman (1989, 2002) and SRL components such as task analysis, self-observation, and self-motivation beliefs (cf. Cleary, 2018; Pape et al., 2013; Schunk, 2001; Zimmerman, 1989). To support students, faculty deployed a learning strategies module and assigned weekly SRL journal prompts. Due to a late start of the intervention, only one of the four faculty participants updated assignment prompts to increase SRL scaffolding. Of the three student participants, none accessed the student learning strategies module, but two of the three students did participate in SRL journaling for three to four weeks.

Research Purpose and Questions

The intervention study examined students' reported SRL strategies and growth mindsets as well as faculty's self-efficacy to support student SRL. The study included the following process and outcome evaluation questions.

Process Research Questions

PRQ 1:   What were faculty and students' experience related to SRL training and support?

PRQ 2:   To what extent did instructors implement revised assignment prompts, weekly journals, and wise feedback?

Outcome Research Questions

ORQ 1: In what ways did first-year college students report a change in growth mindset and use of SRL strategies at the end of the intervention?

ORQ 2: To what extent did faculty feel prepared to support student self-regulation following the

intervention?

Research Design

The study employed an evaluation design, which Cresswell and Plano Clark (2018)

described as appropriate for using multiple phases of research and multiple designs to investigate

a set of inter-connected research questions. Two literature review phases and a needs assessment

study preceded the intervention study. The study also included multiple designs within a

convergent mixed methods design, including a time series design to examine SRL strategies and

a one-group pretest-posttest design (Shadish et al., 2002) to assess changes in students' growth

mindset and faculty self-efficacy to support SRL. I coded students' journal entries using the

fourteen categories of the Self-Regulated Learning Interview Schedule (SRLIS) (Pape & Wang,

2003; Zimmerman & Martinez-Pons, 1986, 1988, 1990). I measured faculty self-efficacy using

the Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016) and open-ended questions

in the faculty postintervention survey and interviews. The process evaluation facilitated

accounting for fidelity of the intervention by checking participant responsiveness (Dusenbury et

al., 2003) and dose related to initial use (Baranowski & Stables, 2000).

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Findings

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In four journal entries, Bruna reported strategies related to three SRLIS categories and

Carmen shared examples from five categories. The SRLIS contains 14 categories, the majority of

which were not identified by the two students. Faculty described slightly higher self-efficacy

with supporting SRL in the Teacher Self-Efficacy Scale for Supporting SRL. The overall mean

increased slightly from 3.28 ($SD = 1.26$) to 3.47 ($SD = 1.53$) on a five-point Likert-scale.

Faculty's higher ratings aligned with qualitative evidence indicating positive experiences with

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student journaling. Faculty identified a variety of benefits for tracking student SRL. However,

faculty faced a challenge with student disengagement, a negative influence on their self-efficacy.

Chapter 1

Synthesis of Research Literature

Students enter college equipped with assets, including successful graduation from high school, family support (Acevedo-Gil, 2019; Carey, 2018; Cavazos et al., 2010; McCallen & Johnson, 2019), and resilience accrued by overcoming previous obstacles (Cavazos et al., 2010). In a 2019 national survey of over 108,660 incoming freshmen, 95% reported a commitment to completing their college degree (Ruffalo Noel-Levitz, 2020). This commitment to college comes with expectations for the future including that graduating from college will open doors to good jobs (Marrun, 2020). This prediction by students is borne out by statistics; the median income for college graduates is more than double that of high school graduates (Haveman & Smeeding, 2006). In addition to career prospects, completing college includes social returns such as increased odds of happiness (Yang, 2008) and improved health outcomes (Hout, 2012). On the other hand, dropping out of college results in lost economic returns (Gusterson, 2017; Hout, 2012), especially for students from disadvantaged backgrounds (Brand & Xie, 2010).

Despite the socioeconomic benefits of completing college, at four-year institutions in the United States, the average first-year retention rate of first-time undergraduates was 81% for 2017-18, whereas the six-year graduation rate was 62% (Hussar et al., 2020). The national persistence rate has not substantially changed from 2015 to 2018 (National Student Clearinghouse, 2020). The factors affecting students range widely from the high-level policies related to education financing to the inner world of the student's beliefs about learning. As college populations diversify (Espinosa et al., 2019; Lohfink & Paulsen, 2005), factors such as minority status and first-generation status impact a higher proportion of students. Evolving demographics are relevant for the context of professional practice in the present study, a state

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university in Massachusetts hereafter referred to by the pseudonym "State University". In 2020, State University was recognized as an emerging Hispanic Serving Institution by the Hispanic Association of Colleges and Universities. In addition, the proportion of first-generation students increased from 41% in 2015 to 56% in 2019 (Office of Institutional Research, n.d.). Meanwhile, first-generation students have lower persistence rates than continuing-generation students (DeAngelo & Franke, 2016; Ishitani, 2006; Lohfink & Paulsen, 2005). First-generation students are eight and a half times more likely to drop out of college than their continuing-generation peers (Ishitani, 2006).

The intersectionality (Crenshaw, 2000) of factors related to a student's background, including first-generation status, socioeconomic status, race, and gender appear to drive down the retention rate at State University. These background characteristics should not be conflated; first-generation students come from diverse backgrounds. However, Lohfink and Paulsen (2005) disaggregated the background characteristics of 1,167 first generation and 3,017 continuing-generation students, finding that African American and Hispanic students together made up 24% of the first-generation sample, but 10% of the continuing-generation sample. Their data also showed that first-generation students were more than twice as likely to speak English as a second language and had a total family income 40% lower than their continuing-generation peers. Hispanic first-generation students were 35.4% less likely to stay in college than their Caucasian first-generation peers (Lohfink & Paulsen, 2005). It is important to acknowledge that factors can intersect and amplify the risks associated with student persistence, including the factor of first-generation status at State University.

Statement of Problem of Practice

A substantial minority of college students in the United States do not persist into the second year of college (DeAngelo & Franke, 2016; Hussar et al., 2020; Ishitani, 2006; Lohfink & Paulsen, 2005). At four-year institutions in the United States, the average retention rate of first-time undergraduates was 81% for 2017-18 (Hussar et al., 2020). For the nine state universities in Massachusetts, the overall fall 2019 retention rate is lower at 75% (Massachusetts Department of Higher Education, 2019). Students who begin college less academically prepared, defined as lower high school GPA and lower standardized test scores, represent 75% of the attrition (DeAngelo & Franke, 2016). African American, Latinx, lower income, and first-generation students are more likely to be academically underprepared (Acevedo-Gil, 2019; DeAngelo & Franke, 2016; Krumrei-Mancuso et al., 2013; Lohfink & Paulsen, 2005). State University, a public university in the northeast United States, has a below average fall 2019 first to second year retention rate of 69%; for first-generation students the retention rate is even lower at 66% (Office of Institutional Research, n.d.).

Systems Approach to Organizing Underlying Factors of College Retention

Improving the persistence of college students requires an examination of the problem as a collection of systems and factors. Neal and Neal's (2013) networked model of ecological systems theory (EST) provides an approach for organizing the various systems and factors related to college student retention. The networked model builds upon Bronfenbrenner's (1979) nested model by clarifying the relationships between systems. Neal and Neal (2013) argue that seeing the different system levels as nested disguises the relationships between them. A classroom microsystem is not nested within a faculty training exosystem; however, the training potentially influences the interaction between the professor and the student. In addition, the

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networked model inverts Bronfenbrenner's notion of seeing the setting as being mainly a location and secondly as a social interaction, by arguing that with a network perspective the connection is mainly a social interaction and secondarily as happening in a place (Neal & Neal, 2013).

A diverse set of factors impact the persistence of first-year college students. According to networked EST, the college student participates in various microsystems, which are settings of social interaction such as specific classrooms, the family, and study groups. In addition to direct relationships, such as with professors and parents, the microsystem level also includes the thoughts, beliefs, and behaviors of the individual student. The mesosystem involves interaction between individuals from different microsystems that include the focal student. For example, a first-year student orientation program that coordinates with a student's professors would be a mesosystemic interaction. An exosystem factor is one that does not directly interact with the focal student but includes at least one participant from one of the student's microsystems. Faculty professional development involves a student's professor, but not the student, and so is an exosystem factor. At State University, the Education Technology Office provides training and support to both faculty and students, operating at both mesosystemic and exosystemic levels. The macrosystem consists of broad cultural, political, and economic forces related to the college-going experience, such as state level appropriations to finance higher education and cultural norms that influence students' choices. Figure 1.1 illustrates the different levels of the system.

Figure 1.1

Networked Systems Theoretical Framework
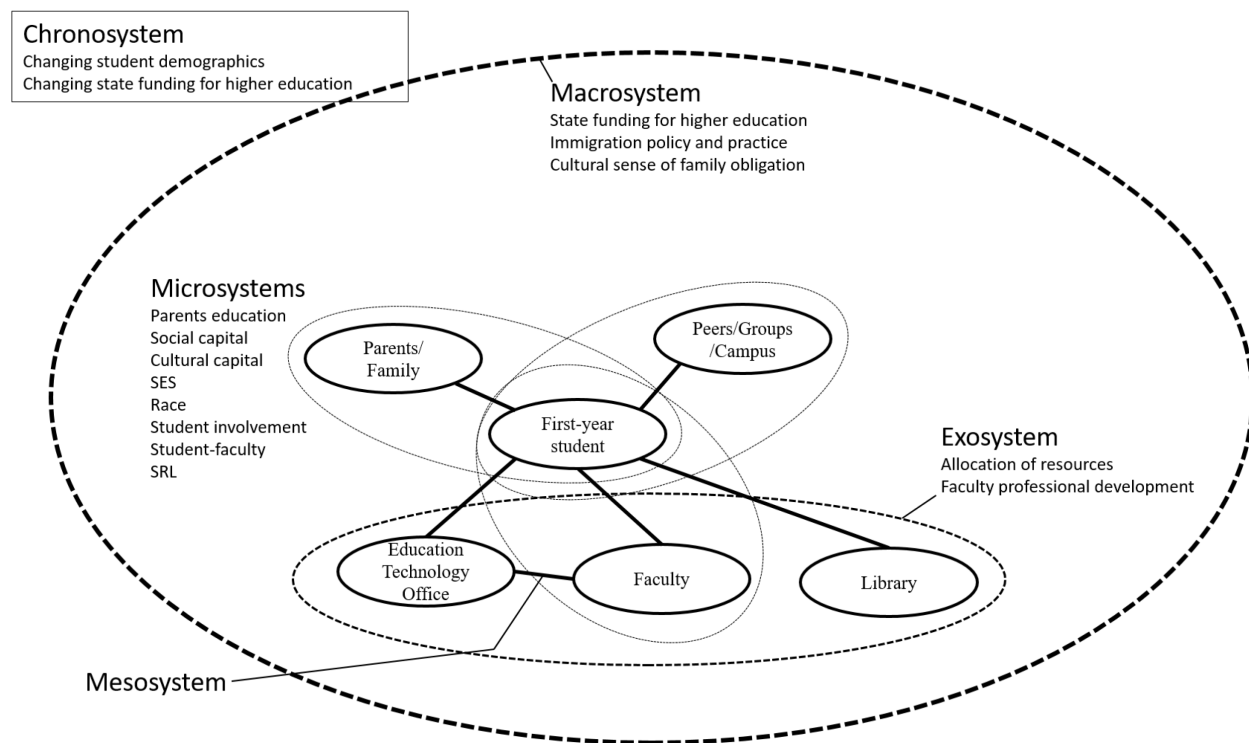
Note. The first-year student's college experience occurs within a network of relationships (Neal & Neal, 2013) that range from proximal and direct microsystem level factors to the distal and indirect macrosystem level.

Evolving Student Demographics

Entering freshman students start college motivated to succeed (Ruffalo Noel-Levitz, 2020), but decreased funding for state universities (Mitchell et al., 2017), immigration policy (Acevedo-Gil, 2019), and a cultural sense of family obligation among Latinx and African American students (Acevedo-Gil, 2019; Brooks, 2015, Carey, 2018) are financial and social macrosystem factors that have repercussions for individual minoritized students of low socioeconomic status. According to Neal and Neal (2013), the macrosystem directs the

"formation and dissolution of social interactions between individuals" (p. 729). The following macrosystem factors provide a context that influences the microsystems in which college students interact.

The diversification of the college student population is a factor in the chronosystem. Although White students experienced the largest growth between 1997 and 2017, Bachelor's Degree attainment increased from 9.5% to 15.3% for Black and from 7.4% to 12.2% for Hispanic adults ages 25 and older (Espinosa et al., 2019). Students from different racial and ethnic backgrounds are increasingly represented at college (Lohfink & Paulsen, 2005). This is partly a result of large inflows of immigration from Asia and the Americas, which is altering the overall demographic makeup of the United States (Grawe, 2018).

Within the United States, the fertility rate among Hispanic women has shifted downward toward the mean but remains 15% higher than the national average (Grawe, 2018). Conversely, "the largest source of current college students" (Grawe, 2018, p. 17), non-Hispanic White high school graduates, are declining in number. Therefore, domestic population shifts combine with immigration over time to increasingly favor a diversification of the overall college-going student population in terms of race and ethnicity. As a consequence of diversification, certain factors become more important when considering the persistence of first-year college students, such as the cultural norms of minoritized students, the impact of immigration policy, and the academic preparedness of first-generation students.

Qualitative studies addressing African American and Latinx students' perspectives on the college-going process reveal a cultural sense of family obligation (Acevedo-Gil, 2019; Brooks, 2015; Carey, 2018; Marrun, 2020). Tello and Lonn (2017) refer to the Latinx cultural value of "familisimo" (p. 351), which involves prioritizing family needs over those of the individual.

Interviews with ten first-generation Latinx college students from low socioeconomic backgrounds revealed a positive sense of family obligation based on encouragement to move beyond their working-class roots (Marrun, 2020). In addition, families can cause stress for students. Carey (2018) conducted an ethnographic study with two 17-year-old male students, one African American and one Latino, in a large mid-Atlantic urban district. These students expressed anxiety about burdening their families with college debt and wondered whether they would be called upon to take care of their families while attending college. Immigration policy and practice is another macrosystem factor related to the impact of evolving student demographics. For students with immigrant family members, an additional form of anxiety relates to the risk of deportation (Marrun, 2020). Students who were themselves undocumented or living in mixed-status families expressed anxiety around the possibility of deportation (Acevedo-Gil, 2019).

Universities are responsible for integrating increasing numbers of students from varied backgrounds. Some students have less knowledge of the college-going process, such as first-generation students (McCallen & Johnson, 2019) and students from lower socioeconomic backgrounds (Haveman & Smeeding, 2006; Lareau, 2011). Likewise, first-generation, minoritized, and financially insecure students are typically less academically prepared for college than their continuing-generation peers (DeAngelo & Franke, 2016; Lareau, 2011). These demographic factors intersect with financial factors, which start at the macrosystem level, but have implications for the exosystem and microsystem levels. The next section will describe how decreased state funding for higher education increases the cost for students and puts a strain on the same resources that would help universities to support students. Taken together, macrosystem

factors related to perceived familial obligations, immigration status, and the financial burden of college, can combine to create anxiety related to the college-going experience.

Financial Roadblocks

Funding for state universities has decreased over the last generation, and student loans have increased (Higher Education Finance Commission, 2014; Mitchell et al., 2017; Oliff et al., 2013). This factor operates at both the macrosystem and chronosystem levels because funding for higher education is an economic and political decision at the state level that has changed over time. On average, states spent 16% less per student in 2017 than in 2008 (Mitchell et al., 2017). In Massachusetts, state universities and community colleges rely on state appropriations and student fees (Higher Education Finance Commission, 2014), but reduced state funding has shifted the cost of higher education to students (Ehrenberg, 2012; Oliff et al., 2013). For example, state universities in Massachusetts increased fees by 62.7% between 2005 and 2014 (Higher Education Finance Commission, 2014). Meanwhile, median income has not grown along with steeper tuition (Oliff et al., 2013). Students for whom the financial cost of college is a roadblock therefore face a steeper challenge; nationally, only 48.5% of first-year students report having the financial resources to complete their degree (Ruffalo Noel-Levitz, 2020).

In terms of institutional budgeting, increased tuition does not fully offset reduced state appropriations. Resources such as faculty positions, course offerings, student-teacher ratios, and library budgets have seen reductions nationally (Oliff et al., 2013). For example, full-time faculty declined nationally between 1970 and 2007 from 80% of teaching positions to 51% (Ehrenberg, 2012). The percentage of faculty not on a tenure track more than doubled between 1975 and 2007. Since adjunct faculty often teach at multiple institutions, have course loads affording less

time for professional development, and less time for contact with students outside of class (Ehrenerg, 2012), this development impacts students in need of support.

Availability of School Resources

Financial policymaking at the macrosystem level leads to institutional decision-making at State University. How institutions allocate budgets, make decisions about provisioning student resources, and organize professional development for faculty and staff occur at the exosystem level. These decisions in the exosystem are removed from the student, but involve microsystems in which the student directly interacts, such as advising, the library, and the classroom. College-bound students from under-resourced high schools receive insufficient advising assistance (Acevedo-Gil, 2019). In interviews with parents of twelfth grade Latinx students in Texas, parents expressed awareness of and consternation about the insufficient assistance provided by school counselors (Palomin, 2020). One parent commented that counselors are stretched too thin: "it is too much for one counselor to have to do that for 1,000 students or 2,000 students" (Palomin, 2020, p. 891). Receiving insufficient advising assistance in high school is a factor that limits the social capital available to students from low socioeconomic backgrounds.

Libraries present another example of the impact of budget allocations and the availability of resources. Data from a large university in California between 2015-2019 showed that having a high school with a librarian related to substantially higher GPA in college (Farmer & Phamle, 2021). At the college level, Mezick (2007) analyzed data from 586 institutions reporting statistics to the Association of Research Libraries and retention data from the Integrated Postsecondary Education Data System to determine the association between library spending and student persistence. All categories of expenditure had statistically significant relationships to student retention; for baccalaureate colleges, total library materials and serials expenditures had

the strongest associations. Soria and colleagues (2015) further showed that students' use of library resources related to increased GPA and retention for first-year undergraduates, demonstrating that the library operates at both the exosystem through expenditures and the microsystem through students' use of the resources.

Faculty professional development is another institutional resource factor within the exosystem that affects but does not interact directly with students. Faculty development is one avenue for preparing instructors to teach a more diverse student body, such as through discussions about antiracist pedagogy and ways to scaffold academically under-prepared students. Faculty development influences the student-faculty microsystem in multiple ways. For instance, faculty development efforts have led to student-centered teaching approaches (Ambrosino & Peel, 2011; Light et al., 2009). In a four-year mixed methods study of professional development for 49 pretenure faculty, participants demonstrated increased orientation towards student-centered teaching, matched by evidence of change from the reflections and interviews. Perez and colleagues (2012) determined that a faculty development program focused on promoting interaction, such as using students' names, having students restate material, and acknowledging students' questions, were followed by a 10% increase in academic achievement for both male and minoritized students at a community college in New Mexico.

The macrosystem and exosystem levels set the stage for the social interactions that make up the microsystems in which college students interact with directly (Neal & Neal, 2013). For example, reductions in state funding for college (Mitchell et al., 2017) and resulting increased fees by universities (Higher Education Finance Commission, 2014) led some students to worry about the financial burden of college on their families (Brooks, 2015; Carey, 2018). The

following factors at the microsystem level involve student relationships with family, school, and how students self-regulate their learning.

Precollege Factors

Students arrive at college with different levels of family support, including encouragement (Palomin, 2020) and financial resources (Millea et al., 2018). Meanwhile, parents with college degrees provide different kinds of social capital, such as knowledge they can impart to prepare their children for the college-going experience (Haveman & Smeeding, 2006; Lareau, 2011). In addition, students start with prior academic experience in high school that may or may not have prepared them well for the academic rigor required in higher education (DeAngelo & Franke, 2016). The following sections will synthesize the research related to each of these factors at the microsystem level.

Parents and Family Background

Parents' cultural capital is a factor within the microsystem that affects student college persistence. Parents want their children to succeed in college (Palomin, 2020), and they can offer cultural or familial capital (Acevedo-Gil, 2019; Carey, 2018; McCallen & Johnson, 2019) to encourage their children to pursue a college degree. For example, a critical ethnography involving 27 African American and Latinx ninth-grade students in New York City highlighted advice and moral support offered by parents (Knight et al., 2004). For example, one participant, a college-educated African American parent, offered insight to her daughter on the intersecting issues of racism and sexism on college campuses.

College-educated parents provide their children with social capital to prepare them for the college-going experience. According to Lareau (2011), children in middle class families participate in extensive activities to cultivate their reasoning and language skills, including

through extracurricular activities and verbal interactions. These parent-child dialogues are consistent with the sociocultural view of learning that places language development (Gee, 2008; Vygotsky, 1978) and cognitive apprenticeship (Rodriguez, 1998) at the center of the learning process. Parents who read to their children, take them on excursions to museums, and assist their children to search for and prepare for college scaffold their children through guided interactions (Lim & Renshaw, 2001).

Students from low socioeconomic status families enter college with less social capital according to Haveman and Smeeding (2006), who found that high school students from low socioeconomic backgrounds were less aware of needs-based financial aid and were less likely to have taken the SATs by October of their senior year. Students who take the SATs later have reduced opportunities to re-take the SATs, making it more challenging to meet early admission deadlines. Their limited social capital results in inequitable opportunities to learn, which Gee (2008) described as access to language, tools, prior knowledge, and relationships that facilitate learning. Fewer opportunities to learn create challenges for these students to relate to and interact with their instructors in college, another important factor in college persistence (DeFreitas & Bravo, 2012; McCallen & Johnson, 2019). In Jack's (2016) view, students from low socioeconomic backgrounds are "doubly disadvantaged" (p. 3) because they lack financial resources and social capital.

Like parental cultural and social capital, socioeconomic status affects student persistence in terms of the cost of attending college. Students from low-income backgrounds (Soria et al., 2014), including first-generation students (Pascarella et al., 2004) work more hours per week than peers with more financial resources or more educated parents. Efforts to reduce community college tuition in Texas led to increased enrollment as well as increased transfer to four-year

universities (Denning, 2017). The cost to attend college is an important factor for students of low socioeconomic status seeking to persist beyond the first year of college (DeAngelo & Franke, 2016; Millea et al., 2018; Soria et al., 2014).

Students of low socioeconomic status have expressed anxiety about the financial burden of college and how to manage financial aid (Acevedo-Gil, 2019; Brooks, 2015; Carey, 2018; Sadowski et al., 2018). In an economic analysis, Millea and colleagues (2018) found that scholarships and grant aid increased retention rates, and Ishitani and Reid (2015) associated receiving multiple types of financial aid with improved retention. However, receiving loans decreased the probability of graduating from college (Millea et al., 2018). Meanwhile, for some students, loans induce anxiety about the financial burden of college (Carey, 2018; Sadowski et al., 2018). Students entering college without sufficient financial resources are at risk of dropping out. In addition to contending with how to pay for college, some students also enter college less academically prepared, which can significantly impact their chance of persisting past their first year (DeAngelo & Franke, 2016; Millea et al., 2018).

Prior High School Achievement

Students' academic achievement in high school has a strong influence on first-year college GPA (Kuh et al., 2008). Less academically prepared students, based on prior high school academic achievement and standardized test scores, are at greater risk of attrition in the first year of college (DeAngelo & Franke, 2016; Ishitani, 2006; Millea et al., 2018). Among 7,571 first-year commuter students, Ishitani and Reid (2015) found that incoming freshmen in the bottom 25% for standardized tests were 2.6 times more likely to leave than students in the top quartile. 23). Kuh and colleagues (2008) analyzed data from the National Survey of Student Engagement between 2000 and 2003. For the 6,193 undergraduate students, precollege academic achievement

was the most important influence on first-year college GPA. In addition, Millea and colleagues (2018) determined that students' chance to graduate from college increased by 0.5% for each point added to their ACT scores.

First-generation students typically have lower SAT scores than continuing-generation students (DeAngelo & Franke, 2016; Lareau, 2011) and are over-represented in the classification of less academically prepared for college (DeAngelo & Franke, 2016). On the other hand, low-income and first-generation students who entered college academically prepared for success had as strong a chance of persisting beyond the first year as their higher income and continuing-generation peers (DeAngelo & Franke, 2016). Therefore, first-generation students who enter college academically prepared can potentially overcome factors such as lower family income or not having social capital about the college experience.

Student-Faculty Interaction

Student involvement in college necessarily requires engagement with faculty in and outside the classroom. Tinto's (1988) conceptual model of institutional departure presents a framework for factors related to college attrition. The model emphasizes academic and social integration, of which student-faculty interaction is a critical component (Kim & Sax, 2009). College GPA correlates positively with the frequency of faculty interaction (DeFreitas & Bravo, 2012; McCallen & Johnson, 2019). However, the value of student-faculty interaction is conditional on the type of interaction and mediated by student characteristics such as gender, race, and level of parental education (Kim & Sax, 2009). Some types of student-faculty interaction have a neutral or negative impact on student outcomes (Kim & Sax, 2009). For example, women chemistry students hinted at gender-based discrimination as a reason for leaving chemistry in McDade's (1988) study of attrition behaviors. A meta-analysis of 65 studies

published between 1990 and 2015 by Ong and colleagues (2018) identified that women of color studying engineering in some cases experienced isolation based on their race and gender. Explicit and implicit gender biases in science, technology, engineering and mathematics (STEM) fields, according to a review by Charlesworth and Banaji (2019), "match the prevalence of gender disparities in STEM representation, pay, and recognition" (p. 7236) across time and place. Fortunately, between the 1970s and the 1990s, the gender gap in STEM persistence has narrowed considerably across education levels (Miller & Wai, 2015). According to Miller and Wai (2015), it is unclear why persistence rates have converged across the undergraduate to graduate levels. One possible reason is the instance of supportive relationships with faculty and staff to cultivate a sense of belonging among students (Ong et al., 2018).

Connecting with faculty outside of class is important for retention. First-generation students often do not connect with faculty outside of class (Kim & Sax, 2009; Longwell-Grice & Longwell-Grice, 2008; Collier & Morgan, 2008) and are less likely to be satisfied with those interactions than their continuing-generation peers (Kim & Sax, 2009). There is evidence that first-generation college students exhibit a higher degree of help seeking avoidance (Kim & Sax, 2009; Longwell-Grice & Longwell-Grice, 2008), even as involvement in academics and with instructors in particular is especially beneficial for first-generation students (Lohfink & Paulsen, 2005; Pascarella et al., 2004). According to Jack (2016), students from low socioeconomic backgrounds will potentially avoid using office hours or developing relationships with faculty because doing so is anxiety inducing or the students believe they should succeed independently. In interviews with four white first-generation, working-class male college students in the southern United States, Longwell-Grice and Longwell-Grice (2008) explored themes around

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faculty interaction, including cultural expectations and academic insecurities. According to one first-generation college student from a low socioeconomic background:

> Patrick felt that the college had no obligation to support him in his efforts. It was entirely up to him at this point… He could not look back to his parents for support, and he did not expect help from the college. Patrick thought he should be strong enough and smart enough to figure out college by and for himself. (Longwell-Grice & Longwell-Grice, 2008, p. 413)

As a result of not connecting with faculty outside of class, a communication breakdown can result when faculty perceive their instructions and expectations to be clearly stated, but students are uncertain about these expectations (Collier & Morgan, 2008; Sadowski et al., 2018).

Student involvement in the classroom can be fostered by the learning environment cultivated by the professor. When faculty create a welcoming environment, make eye contact, and use praise, they support students' self-efficacy and motivation (Creasey et al., 2009; Sidelinger, 2010; Trolian et al., 2016). For a sample of 1,803 first-year undergraduate students across 17 four-year colleges and universities, the frequency and quality of student-faculty contact positively influenced student motivation (Trolian et al., 2016). Verbal and non-verbal communication with students creates a sense of instructor immediacy, which Creasey and colleagues (2009) found to be partially related to students' expectations about their success, or perceived self-efficacy, because immediacy was mediated by the student-faculty relationship. Of interest, whereas verbal immediacy related to students' sense of connectedness with their professors, nonverbal immediacy made students less likely to feel anxious in the student-faculty relationship (Creasey et al., 2009). Similarly, Sidelinger (2010) found that teacher nonverbal immediacy predicted student participation. By creating a welcoming environment that reduces

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student anxiety and promotes connectedness, faculty can play an important role in helping students struggling to integrate by offering a "niche on campus" (Berger & Milem, 1999, p. 658) where students feel safe and welcome.

In addition to making students feel welcome, Paris and Paris (2001) theorized that teachers can cultivate a learning environment that facilitates student self-regulation of learning through practices such as project-based learning or self-assessment. Relating content to students' experiences and interests, incorporating student choice, and connecting with students personally were practices used by faculty teaching students of color who were found to fully engage in the academic experience at a private research university (Vetter et al., 2019). In the qualitative phase of research into academic thriving, thirteen faculty participants were selected based on having students of color who scored highly on the Thriving Quotient, a measure of "Engaged Learning and Academic Determination" (p. 12). The semi-structured interviews revealed that almost all the instructors designed assignments with choice to cultivate autonomy and intrinsic motivation (Vetter et al., 2019). Beishuizen (2008) compared two case studies involving class projects that created a community of learners, to see if these learning environments helped students to develop their skills in self-regulated learning (SRL). SRL includes regulating one's motivation, believing that one can succeed, employing strategic behavior, and using metacognition to plan, monitor, and reflect on one's work (Schunk, 2001; Zimmerman, 1989). The more successful case study was a cancer research project where professors involved students in the professors' research. Since professors were directly involved in the project, they modeled and scaffolded SRL strategies. One teacher noted that he showcased planning and monitoring strategies, while gradually shifting responsibility for planning to the students (Beishuizen, 2008). The factors associated with SRL and college student retention will be detailed below.

Motivation

As described in the previous section, students accrue benefits from interaction with faculty that help them to succeed academically and persist year-to-year. One benefit is a professor's capacity to facilitate students' motivation to engage in academics (Creasey et al., 2009; Sidelinger, 2010; Trolian et al., 2016). Motivational factors can predict academic performance (Ning & Downing, 2010; Slanger et al., 2015); therefore, motivation is an important construct associated with college success. Students are intrinsically motivated to learn when they feel a sense of autonomy, competence, and relatedness (Ryan & Deci, 2000). In other words, intrinsically motivated students perceive that they are self-determined in choosing their learning path, are confident that they can succeed, and feel connected to and supported by their instructors. Intrinsic motivation and feeling connected to the institution are both important for first-generation students. Próspero and Vohra-Gupta (2007) surveyed 197 community college students in the southern United States to determine the correlation between integration and motivation variables. Pearson's correlations between amotivation, intrinsic motivation, extrinsic motivation, academic integration, and social integration, indicated that motivation and integration contributed significantly to academic achievement for first-generation students, but not for continuing-generation students. For first-generation students, academic integration had a significant positive relationship to intrinsic motivation and academic integration had the highest contribution to academic performance. The next section examines the relationship between students' sense of self-determination and their self-beliefs in relation to learning. Students who perceive themselves to be autonomous are more likely to view their efforts as important causes for their success or failure (Graham, 2020; Ryan & Deci, 2000).

Self-Beliefs About Learning

Arrival at a particular outcome, such as receiving a grade, can prompt students to attribute causality for the outcome (Graham, 2020; Stupnisky et al., 2011). For 371 first-year college students at a Canadian university, this causal search was most likely to occur for an unexpected outcome (Stupnisky et al., 2011). When students ask why they achieved a particular outcome, the answer can encompass three dimensions, including locus (or location), stability, and controllability (Graham, 2020). The locus refers to whether the student locates causality to an internal, or personal, source or to an external source in the learning environment. The cause may be interpreted as stable or as subject to change. Finally, students might perceive that the cause is subject to their control, or not. The attribution process can impact students' motivation (Graham, 2020; Stupnisky et al., 2011). If students score poorly on a test, they might attribute their performance to their level of effort or strategies used to study and resolve to get help or adjust their study strategies. This internal locus of control, which locates the cause of an outcome to one's own effort or ability (Graham, 2020), empowers students.

First-generation students in particular benefit from an internal locus of control (Aspelmeier, 2012; Dryden et al., 2021). Three-hundred and twenty-two undergraduate students in the southeastern United States were surveyed to see if first generation and continuing-generation students differ in terms of self-esteem, locus of control, college adjustment, and GPA (Aspelmeier et al., 2012). College adjustment was defined as, "an individual's ability to cope with the demands of academic work and the social environment of university life, as well as his or her sense of well-being and attachment to the academic institution" (p. 757). Internal locus of control for academic achievement was more predictive of college adjustment for first-generation students than for continuing-generation students. Moreover, viewing the cause of an outcome as

external in nature had a greater negative impact on college adjustment for first-generation students, indicating that locus of control acts as a two-way amplifier for first-generation college adjustment.

An alternative to having an internal locus of control occurs when students attribute their performance to having low ability, concluding that they are simply not good at the subject in question (Blackwell et al., 2007; Dryden et al., 2021; Graham, 2020), or when students attribute the outcome to an external source, such as unfairness in the test design. Crediting low ability or external sources can be a drag on motivation, but first-generation college students have been successfully trained to attribute setbacks to their own efforts, resulting in higher academic achievement than a control group (Dryden et al., 2021).

Students proactively preparing for class and attributing outcomes to their own behaviors predicted both in- and out-of-class involvement with instructors (Sidelinger, 2010). In interviews with Latinx college students, Cavazos and colleagues (2010) explored participants' perceptions about their personal characteristics with regards to academic achievement. Resilient students showcased an internal locus of control by focusing on hard work as a path to achieve their goals. Although some of the students interviewed expressed low opinions about their intelligence, they downplayed intelligence as crucial to their success. One student highlighted her parents' struggles to overcome adversity to argue that she too could persevere through difficulty (Cavazos et al., 2010).

Attribution theory is a source for Dweck's mindsets research (Dweck & Yeager, 2019). While investigating the relationship between attribution and learned helplessness, Dweck and Yeager wondered why students with equivalent ability would either give up or "relish the challenge" (p. 483). This investigation led to the conceptualization that students' self-beliefs

about their intelligence would influence their willingness to attempt difficult tasks, as well as how they would attribute the outcome. A student's theory of intelligence, having a growth or fixed mindset, can be a factor in academic achievement. According to Dweck and colleagues (1995), individuals with an entity theory of intelligence (or fixed mindset) are more vulnerable to feeling helpless under challenging performance conditions, whereas people with an incremental theory of intelligence (or growth mindset) are more likely to see opportunities to learn and grow in the face of challenges. In addition, individuals with a fixed mindset focus on performance, rather than learning, and so view a particular outcome as a reflection of their intelligence, rather than as an opportunity to progress towards mastery (Aronson et al., 2002; Blackwell et al., 2007). Two quantitative longitudinal studies by Blackwell and colleagues (2007) asked participating middle school students from socioeconomically and ethnically diverse middle schools in New York City to complete a motivational questionnaire each fall term and measured academic outcomes via term grades. Participants exhibiting a growth mindset in both Study 1 (373 participants) and Study 2 (48 participants) achieved higher end-of-term grades in mathematics. The second study included a growth mindset intervention and determined that by teaching students that it is desirable for learning to be difficult, and that intelligence is grown, students could update their theories of intelligence. Students who started with a fixed mindset saw the most significant academic improvement following the intervention (Blackwell et al., 2007).

At the college level, African American students benefited from having a growth mindset (Aronson et al., 2002). The intervention included training about the malleability of intelligence and reinforcements in the form of letter writing and speeches to struggling middle school students to encourage their younger peers to view their brains as muscles that can grow. Views about the malleability of intelligence persisted one year later for participants in the intervention

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condition and the African American students achieved higher grades than African American students in the control conditions.

The extent to which growth mindset is a factor in college students' academic performance is in debate, however, as interventions with college students to promote a growth mindset have achieved mixed results according to two meta-analyses by Sisk and colleagues (2018). Meta-analysis 1 examined the relationship between mindsets and academic achievement. The authors identified 129 empirical studies meeting inclusion criteria, which required studies to be in English, collect a measure of mindset prior to or without a mindset intervention, include a measure of academic achievement, and have or include enough information to compute a bivariate correlation coefficient to show the connection between mindset and academic achievement. The "average correlation between growth mindset and academic achievement was very weak – $r = .10$" (p. 561). Meta-analysis 2 focused on the impact of mindset interventions within studies with control groups and the same other criteria cited above. Using these inclusion criteria, Sisk and colleagues identified 29 studies. Interventions benefited academically at-risk students and students from low socioeconomic backgrounds but did not show an advantage for average college students and adolescents. In a more recent quantitative study of 229 first-year undergraduate students at a small private liberal arts college, McCabe and colleagues (2020) likewise found that an increase in self-reported growth mindset did not correspond with higher grades or increased retention.

The mixed effects of growth mindset research point to the conditionality of this construct. Dweck and Yeager (2019) acknowledged that high achieving students do not necessarily achieve higher grades with a growth mindset but argued that such students do benefit from increased willingness to attempt difficult tasks. Macakova and Wood (2020) found that a growth mindset

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indirectly related to academic achievement through higher self-efficacy. Therefore, as Sisk and colleagues (2018) speculated, it could be helpful to couple the mindset factor with other factors, such as self-efficacy.

Another aspect of motivation connected to self-beliefs in relation to learning is a student's level of interest, which is a willingness and tendency to renew access to specific subject matter over time (Järvelä & Renninger, 2014). A series of five studies of undergraduate students by O'Keefe and colleagues (2018) adapted Dweck's (1995) concept of growth mindset to beliefs about *interest* with the hypothesis that individuals who believe that interests are intrinsic rather than cultivated are likely to lose their motivation in the face of difficulty. The studies showed that people with a fixed theory of interest expected "passion to provide limitless motivation" (p. 1663) and when that expectation faced challenging circumstances, their motivation steeply declined, whereas individuals with a growth theory of interest maintained a more sustainable level of motivation.

How college students characterize their intelligence and attribute their success in learning relates to their level of interest (O'Keefe et al., 2018), perceived self-efficacy (Macakova & Wood, 2020; McDade, 1988), and academic performance (Macakova & Wood, 2020). In some examples focused on college students, a growth mindset facilitated academic achievement, including for African American (Aronson et al., 2002) and academically at-risk students (Sisk et al., 2018). Conversely, having a fixed mindset or a fixed level of interest makes students more vulnerable to declining motivation under challenging circumstances, which can therefore impact these students' level of confidence. Ryan and Deci (2000) pointed out that when individuals perceive themselves to be competent, they are more likely to be motivated to take on tasks,

which is consistent with Macakova and Wood's (2020) finding that self-efficacy mediates the connection between growth mindset and academic achievement.

According to Bandura (1977), individuals achieve a high level of self-efficacy when they believe that challenges can be overcome through sustained effort. Not surprisingly, being confident relates to achievement, as self-efficacy is predictive of GPA (Defreitas & Bravo, 2012; Krumrei-Mancuso et al., 2013; Macakova & Wood, 2020). On the other hand, performing below one's expectations can reduce one's level of confidence. Ethnographic studies of Black and Latinx first-generation students from low socioeconomic backgrounds reported that despite receiving familial encouragement, the incoming first-year students experienced anxiety and self-doubt about their academic abilities (Acevedo-Gil, 2019; Carey, 2018). One student reflected:

> After I took the SAT, I started thinking if the tests in college are going to be that stressful or harder. It made me think about college and wonder "If that is what college is like, I don't know how I'm going to handle it." (Acevedo-Gil, 2019, p. 118)

First-generation students' feelings of confidence about their academics can impact their college adjustment. In a quantitative study of 192 first-year students at a private liberal arts west coast university, Ramos-Sánchez & Nichols (2007) used mediation path analysis to see if self-efficacy, measured by the College Self-Efficacy Instrument, mediated the relationship between student generation and GPA and college adjustment. First-generation students typically had lower self-efficacy at the start of the year, which also predicted college adjustment at the end of the first year. Students entering the first year of college with low self-efficacy and a fixed mindset, are therefore at risk of getting lower grades and being less adjusted to the college environment than students with high self-efficacy and a growth mindset. Students' self-beliefs about learning therefore impact their motivation and adjustment to college life. In the next section, I will discuss

students' outward behaviors and engagement with the learning environment, which also influence their motivation to engage in academics.

Student Involvement

Student involvement is another key factor in explaining college student persistence. According to Astin's (1999) student involvement theory, student persistence is linked to the degree of energy dedicated to involvement in college, from academics to co-curricular activities such as on-campus part-time jobs and athletics. Astin (1999) viewed involvement as the "behavioral manifestation" (p. 522) of motivation. Students reporting low levels of institutional commitment are less likely to get involved or remain in college past their first year (Berger & Milem, 1999). Meanwhile, active participation in academics helps first-generation students of low socioeconomic status to persist beyond the first year of college (Berger & Milem, 1999; Ishitani & Reid, 2015; Kim & Sax, 2009; Kuh et al., 2008). For a sample of 6,193 first-year students across 18 four-year colleges, Kuh and colleagues (2008) found that although high school achievement had the strongest influence on first-year GPA, student engagement also related to higher grades, especially for students who entered college with lower ACT scores and for minoritized students. First-generation students in particular experience improved learning outcomes from academic engagement (Kim & Sax, 2009; Kuh et al., 2008; Lohfink & Paulsen, 2005; Pascarella et al., 2004).

A situation characterized by a "sense of security and relatedness" (Ryan & Deci, 2000, p. 71) is one factor that fosters intrinsic motivation. A qualitative study examined the effect of school culture on the success of twenty female Spelman College alumni (Winkle-Wagner et al., 2020). African American women who had successfully graduated with at least a bachelor's degree between 1954-2014 were recruited for open-ended, unstructured interviews. According to

the participants, a high touch environment, including substantial interaction with peers, faculty, and administration, fostered social integration.

Academic engagement and a sense of relatedness with professors are two of the contributing factors related to student motivation. Additional factors include students' incremental theory of intelligence (Aronson et al., 2002; Blackwell et al., 2007) and self-efficacy (Defreitas & Bravo, 2012; Krumrei-Mancuso et al., 2013; Macakova & Wood, 2020), which contribute to their sense of competence as learners (Ryan & Deci, 2000). The following section examines how students self-regulate their learning, including their level of motivation. The motivation constructs examined in the present section relate to whether students might self-regulate their learning. For instance, students with a sense of autonomy, self-efficacy, and a growth mindset, are more likely to feel empowered and potentially believe that it is consequential to monitor and adapt their learning strategies. On the other hand, students who view their learning as externally directed, who do not feel confident in their ability to undertake a learning task, and who do not believe that intelligence can change, may be less inclined to view the effort required for self-regulation as worthwhile.

Self-Regulated Learning

The microsystems described so far mainly involve the social interactions important to college persistence, such as within the family and in the classroom. Social networks are a focus of the microsystems in the networked model of EST, "include[ing] the focal individual" (Neal & Neal, 2013, p. 728). SRL, including motivation to engage in academic work, a belief that one can succeed, the use of learning strategies, and metacognition used to set goals and monitor progress (Schunk, 2001; Zimmerman, 1989), are factors at the individual student level, involving the internal cognitive processes of the person. Although one's internal cognitive processes are

factors of the individual, they are reciprocally related to and influenced by one's behavior and the environment in which one interacts (Bandura, 1986). Like motivation, the following factors, though personal, can be affected by one's behavior and environment.

Self-regulated learners regulate their motivation and use strategies to help them achieve academically (Schunk, 2001; Zimmerman, 1989). SRL includes a variety of dispositions and skills and students will vary in their preferences and competencies. For example, Antonelli and colleagues (2020) administered the Learning and Study Strategies Inventory to 914 undergraduate students at a public university in Texas to compare the SRL skills of first-generation and continuing-generation students. Although first-generation students scored lower on certain subscales, such as anxiety, information processing, and study aides, they performed better than their continuing-generation peers on attitude and motivation. The authors determined that first-generation and continuing-generation students alike have strengths and weaknesses, and "students from all groups are lacking in the SRL skills necessary to be successful in college" (Antonelli et al., 2020, p. 79). Similarly, Williams and Hellman's (2004) study of 708 college students at a rural college in the southern United States, 40.7% of whom were first-generation students, surveyed participants using the Self-Regulation for OnLine Learning Scale and controlled for comfort with computers. In the ANCOVA results, first-generation students reported lower levels of self-efficacy in an online learning environment. The authors pointed to the importance of cultivating a learning environment that specifies ways for students to seek help and that encourages them to do so. In addition, students need assistance with regulating their motivation, such as through time management. The following section will examine the impact of procrastination on student success.

Regulation of Motivation

Different aspects of motivation vary in importance for different students in the college setting. No single motivational factor is the key to predicting academic performance (Slanger et al., 2015). In a longitudinal study of 6,043 first-year college students across ten years at a medium-sized Midwestern university, Slanger and colleagues (2015) used the College Student Inventory, which includes six different scales, to measure motivation. The scales of Students' Predicted Academic Difficulty, which measures whether students think they will perform poorly in the first year of college, and Dropout Proneness were consistently predictive of cumulative GPA. Although motivational factors generally did predict academic performance, the specific factors varied over time "as cohort characteristics vary over time" (p. 297). For example, Receptivity to Academic Assistance only predicted GPA in some years.

As described by social cognitive theory, motivation is reciprocally related to other aspects of SRL (Bandura, 1986; Schunk, 2001; Zimmerman, 1989). In a longitudinal study, Ning and Downing (2010) observed that students who reported using effort-related strategies at the beginning of the year had a stronger probability of high motivation at the end of the year. A mixed methods study by Park and Sperling (2012) compared the self-reported differences in SRL and self-handicapping behaviors between undergraduate students classified as high procrastinators and low procrastinators. Self-handicapping occurs when work is delayed to justify anticipated failure and therefore guard one's feeling of self-worth. Forty-one students completed a survey and participated in individual or focus group interviews. One of the six instruments included in the questionnaire, the Procrastination Assessment Scale-Student, was used to divide students into high and low procrastinator groups. High procrastinators self-reported higher tendencies to self-handicap. Moreover, the use of learning strategies, such as

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rehearsal time, environmental management, and effort regulation, were negatively correlated with high procrastination. In the qualitative analysis, one theme related to a lack of motivation. Some students justified procrastination through defensiveness, such as by attributing little importance to achieving high academic standards.

When students put off studying or working on projects, their behavior reflects an insufficient level of motivation. Students procrastinate when they delay or avoid doing their work (Tuckman, 1991). Self-reported procrastinating students performed more poorly in a web-based study-skills course with many performance opportunities and deadlines, including 216 learning activities to improve aspects of SRL such as self-confidence and time management (Tuckman, 2005). The Tuckman Procrastination Scale measured procrastination tendency for 116 college students at a large Midwestern university. Students who procrastinated were more likely to rationalize postponing work, for example by indicating that they work better under pressure. Procrastination is thus a problem of both motivation and metacognition: by attributing success to last minute efforts, students hold inaccurate views about the effectiveness of their study habits.

This lack of clarity about one's own behavior aligns with low self-efficacy. Tuckman and Sexton (1990) observed that college students with low self-efficacy on average over-estimated by 77% their predictions for what they would accomplish week-by-week. These examples demonstrate the link between motivation, belief in self, and metacognition. In a positive cycle, students who value what they are learning are more likely to use strategies to help sustain their motivation and are less likely to procrastinate (Wolters & Benzon, 2013). The relationship between motivation and metacognition is reciprocal. Just as students' motivation can influence their use of strategies, students sometimes experience metacognitive illusions, or misconceptions

about the learning process, which deter them from adopting empirically supported learning strategies.

Metacognition

Students' beliefs about how they learn, their assessment of the available information for a given task, and their development of knowledge about particular learning strategies make up three categories of metacognitive knowledge (Flavell, 1979). Like other kinds of knowledge, the knowledge of metacognitive strategies is stored in long-term memory and retrieved when needed (Flavell, 1979). For instance, students could believe that cramming for an exam served them well in the past and that given their other responsibilities and the type of information to be tested on the exam, this approach will help them to succeed again. However, metacognitive knowledge, like other kinds of knowledge, can be incomplete or incorrect (Flavell, 1979). Studies examining the effectiveness of practices such as interleaving, spacing, and retrieval practice illustrate how students make flawed assessments related to the learning strategies they should use. As a result, some students opt to use less effective learning strategies even when presented with evidence that an alternative strategy is more effective.

Strategies such as interleaving, spacing, and retrieval practice are robustly supported by empirical research (see Dunlosky et al., 2013; Roediger & Pyc, 2012). However, effective learning strategies can seem counter-intuitive (Brown et al., 2014). Returning to Flavell's (1979) categories of metacognitve knowledge cited above, students were asked to compare the effectiveness of interleaving versus massed practice made faulty judgements about how they learn and which learning strategy would help them to most accurately distinguish between different artists (Kornell & Bjork, 2008; Wang & Xing, 2019). Two experiments by Kornell and Bjork (2008) addressed the effectiveness of interleaving and spacing as approaches in learning.

Contrary to expectations, interleaving helped the participants in both experiments to distinguish between artists or styles more successfully. The authors discussed the possibility that interleaving facilitated the process of "discrimination" (Kornell & Bjork, 2008, p. 590) by the participants. Even though spacing was a more effective learning strategy, the majority of participants in both experiments believed that massing was superior. For example, 83% of the participants in Experiment 1a persisted in believing the metacognitive illusion that massing was more effective even though the learning outcomes proved otherwise. The same misconception about interleaving was found when the study was replicated with 60 undergraduate students at Guangzhou University in China (Wang & Xing, 2019).

Research on retrieval practice (Callender & McDaniel, 2009; Karpicke et al., 2009; McCabe, 2010) has shown that college students underestimate the value of empirically supported learning strategies. Similar to misconceptions about the effectiveness of spaced interleaving, students sometimes believe that rote rereading is more effective than retrieval practice (Karpicke et al., 2009). A person might prefer studying by rereading a text and subsequently mistake familiarity for understanding (Karpicke et al., 2009). When 177 undergraduate students in Missouri shared study strategies, rereading notes or textbook was the most frequently used strategy and only 8% of the participants acknowledged that testing themselves would help them to perform well on a subsequent exam (Karpicke et al., 2009). One theory is that students shy away from experiencing "desirable difficulties" (Brown et al., 2014, p. 98) in favor of easier approaches.

Another type of metacognitive illusion relates to what Bandura (1977) described as outcome expectancy, a prediction that a specific behavior leads to a particular outcome. The illusion manifests as overconfidence bias in the behavioral economics literature (Bosch-Rosa et

al., 2018; Chira et al., 2008; Hoppe & Kusterer, 2011). In three quantitative studies, Serra and DeMarree (2016) tested the hypothesis that undergraduate students make overconfident predictions about learning outcomes due to their desired level of performance. For Study 1, desired and predicted final exam and course grades were collected as part of an end-of-course assessment administered as a survey just prior to the final exam. Actual grades on the final exam and for the course were provided by the course professors. For Study 2, the researchers asked students to predict the actual grades immediately after finishing the exam. For Study 3, participants reported their desired and predicated grades for all four exams during the course. The authors regressed the exam and final course grade predictions onto desired and actual exam and final course grades. For all three studies, desired grades inflated students' predictions of performance. The lowest performing students showed greater overconfidence in their predictions than high performing students. Overconfidence bias and the avoidance of cognitive strategies such as retrieval practice and spacing together represent metacognitive illusions. Overconfidence bias in particular appears to affect students who are less successful academically (Atherton, 2014; Morales, 2012; Serra & DeMarree, 2016), or who score lower on cognitive tasks (Bosch-Rosa et al., 2017; Hoppe & Kusterer, 2011).

Since first-generation students are more likely to be academically under-prepared than continuing-generation students (DeAngelo & Franke, 2016), first-generation students can be at particular risk of overconfidence bias. Atherton (2014) found that not only were first-generation students typically less academically prepared than traditional students, first-generation students also did not perceive themselves to be less prepared. This gap in perception could impact the first year experience if students are less successful academically than they anticipated they would be. A phenomenological perspective was used for a longitudinal interview series spanning fifteen

first-generation students' first semester at a university in northeastern United States (Morales, 2012). Less successful students underestimated the academic rigor, did not manage their time effectively, and could be overconfident about their chances of success. By the time they realized their misconceptions, they felt anxious about whether they could catch up.

A failure of metacognition can adversely affect one's self-efficacy and motivation. Thibodeaux and colleagues (2017) observed that when undergraduate students did not achieve their desired GPA, they typically decreased their target rather than update time planned for academics or learning strategies, highlighting again the reciprocal dynamic between SRL factors such as metacognition and motivation. Since metacognitive strategies are meant to help students monitor progress toward achieving learning goals, metacognitive illusions present risks that need to be mitigated, particularly for academically under-prepared students entering college.

Conclusion

First-generation, minoritized, and socioeconomically disadvantaged college students have demonstrated concerns about their self-efficacy (Ramos-Sánchez & Nichols, 2007), ability to pay for college (Carey, 2018; Sadowski et al., 2018), and tend to be less academically prepared (DeAngelo & Franke, 2016). As illustrated in Figure 1.2, when college students are motivated, use strategies to self-regulate their learning and engage actively in academics, they increase the probability of performing well and persisting to graduation. Faculty can support students in developing self-regulation skills, such as by creating a learning environment that supports SRL. Although factors such as financial aid and high school academic achievement are important, they are less amenable to an intervention by the Education Technology Office at State University, which interfaces primarily with faculty and students attending the University. Focusing on factors related to SRL and engagement with faculty could give students powerful tools to

succeed in college. The following chapter investigates the factors of SRL and student-faculty engagement at State University.

Figure 1.2

Conceptual Model
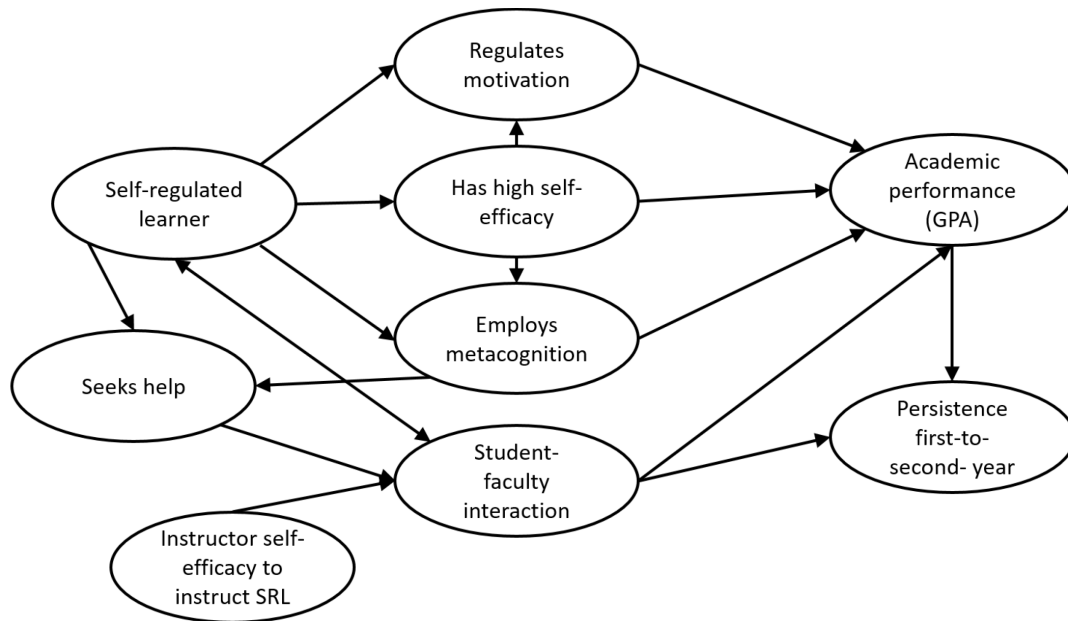
Chapter 2

Needs Assessment Study

For this needs assessment study, I explored specific factors that I can affect, including students' SRL and the ways faculty can support students as they develop SRL skills and behaviors. Self-regulated learners can stay motivated and employ strategies to help them achieve academically (Schunk, 2001; Zimmerman, 1989). Metacognition is an important component of SRL and involves goal setting and adjusting, self-assessment, and strategies used to aid in cognition (Flavell, 1979). Motivation is another aspect; students are less likely to procrastinate when they value what they are learning (Wolters & Benzon, 2013). Procrastination can also signal a lack of metacognitive awareness, as self-reported procrastinators can rationalize postponing work even though procrastination is connected to poor performance (Tuckman, 2005). Compared to continuing-generation peers, first-generation college students report more issues of time management, prioritization, and interpretation of "*tacit knowledge*" (Collier & Morgan, 2008, p. 442). However, Antonelli and colleagues (2020) reported that first-generation and continuing-generation students alike have assets and limitations with respect to SRL. Students from low socioeconomic backgrounds share feeling disorganized, overwhelmed by academic work, and disconnected from academic supports (Sadowski et al., 2018). Faculty can help students to overcome these challenges and help students to self-regulate. Instructors can both provide direct instruction related to SRL strategies as well as create a learning environment that helps students to actively develop their self-regulation skills (Beishuizen, 2008; Paris & Paris, 2001). In Vetter's (2019) study of academic thriving, faculty were successful when they offered choices, promoted diverse perspectives, and developed connections with students.

Context of the Study

In fall 2021, there were 580 first-year students at State University, of whom 54% were female, 51% were White, 20% were Black or African American, and 20% were Hispanic or Latino. State University includes two separate models for first-year experience courses: Fundamentals and College 101 (both pseudonyms). There were 30 sections of Fundamentals courses in fall 2020 and 11 sections of College 101. This faculty population was selected because they have instructed first-year students this past year and are familiar with the educational and developmental needs of first-year students. Moreover, the first-year experience courses aim to orient students to academic life, such as by building students' confidence in their abilities and study skills (Field Observation Notes, January 13, 2021).

Purpose of Study and Research Questions

The purpose of this needs assessment study was to describe how first-year students at State University self-regulate their learning and the extent to which professors are aware of SRL and instruct students on using SRL strategies.

This study was guided by the following research questions:

RQ 1: To what extent do students at State University report procrastination behaviors?

RQ 2: What are the study habits of first-year college students at State University?

RQ 3: To what extent do professors at State University coach first-year students on how to self-regulate their learning?

RQ 4: To what extent do professors at State University perceive that they create an environment that promotes the development of self-regulated learning?

Research Design

The needs assessment study employed a mixed methods approach using a convergent parallel design with simultaneous quantitative and qualitative data collection and analysis (Lochmiller & Lester, 2017). I hold to the assumption that quantitative and qualitative methods are compatible and practical (Lochmiller & Lester, 2017) for describing students' study habits, the extent to which professors coach first-year students on how to self-regulate their learning, as well as how faculty create an environment that promotes the development of SRL. The mixed methods design facilitated the triangulation of quantitative and qualitative data (Onwuegbuzie & Leech, 2006).

Method

This section describes the participants, measures, and procedures for participant recruitment, data collection, and data analysis. The measures, constructs, and types of data analysis are aligned to the research questions in the Research Matrix for the needs assessment study (see Appendix A).

Participants

Two populations were sampled for the needs assessment study, including first-year students for fall 2021 and faculty who instructed first-year experience courses in fall 2020 at State University, a small suburban institution in the northeastern region of the United States. The sampling was partly purposeful because first-year students and faculty known to have taught first-year experience courses the previous year were asked to participate. In addition, faculty interviewees were selected with the aim to cover multiple disciplines (e.g., Humanities, STEM). These were also convenience samples because surveys and interviews occurred with students and faculty who were available and willing to participate.

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Students

The first population consisted of first-year students during fall 2021. The survey was completed by 50 (9%) of the 580 students who received the survey. The breakdown of respondents included 33 (66%) female students, 14 (28%) male students, 1 transgender student, and 2 students who identified with a gender not listed in the options. In terms of race, 60% identified as White, 12% as Hispanic or Latinx, and 10% as Black or African American. See the detailed breakdown in Table 2.1. I compared the survey sample's demographic characteristics with the characteristics of the overall population of first-year students at State University, which was 54% female, 20% Hispanic or Latinx, and 20% Black or African American. Therefore, the sample is skewed towards students who identified as White and as female.

Table 2.1

Demographic Characteristics of Student Survey Respondents

Characteristic	Frequency	Percent
Age		
18-19	48	96.0
20-23	1	2.0
30-39	1	2.0
Gender		
Woman	33	66.0
Man	14	28.0
Transgender	1	2.0
A gender not listed here	2	4.0
Race		
Asian	4	8.0
Black or African American	5	10.0
Hispanic or Latinx	6	12.0
Native Hawaiian and other Pacific Islander	1	2.0
White	30	60.0
Other	2	4.0
Prefer not to say	2	4.0

Faculty

The second population included 34 faculty who taught first-year experience courses during fall 2020. Fifteen of the 34 faculty (44%) who taught either a Fundamentals or College 101 first-year experience course during fall 2020 responded to the survey. Respondents represented the four academic colleges, including Arts & Humanities (46.7%), Science, Technology, Engineering and Mathematics (STEM) (33.3%), Education & Social and Behavioral Sciences (13.3%), and Business (6.7%). The majority (53%) had more than 15 years of college teaching experience, while just 6.7% had under four years of college teaching experience.

A smaller subset of three faculty participated in semi-structured interviews. The names associated with interviewees are pseudonyms. Leah was a female STEM faculty member with 11 years of full-time teaching experience. Oscar was a male Business faculty with 10 years of teaching experience. Helen was a female faculty member in the College of Education & Social and Behavioral Science with two years of teaching experience.

Measures

Three instruments were used to collect data about student SRL and the role of the instructor in facilitating student SRL. These included a student survey, a faculty survey, and a faculty interview protocol.

Student Survey

SRL includes the thoughts and actions students undertake to achieve their learning objectives. The self-regulated student is actively involved in a process that includes regulating motivation, making plans, using strategies, and monitoring progress (Schunk, 2001). The student

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survey (see Appendix B) included two instruments and an open-response question. Demographic questions related to gender and race.

Tuckman Procrastination Scale. Student procrastination behaviors, defined as the habit of intentionally deferring something that should be accomplished, were assessed by the Tuckman Procrastination Scale (Tuckman, 1991). The instrument included 16 items to which participants responded on a four-point scale with anchors of (1) That's me for sure and (4) That's not me for sure. The responses were reverse coded during analysis to facilitate comparison with other research. Therefore, higher scores denote a higher propensity to procrastinate. The brief 16-item version can be used without a major reduction in reliability, according to Tuckman (1991), who reported a Cronbach's Alpha reliability coefficient of .86. Students were asked to state their level of agreement with statements such as, "I needlessly delay finishing jobs, even when they're important", "When I have a deadline, I wait till the last minute", and "I avoid doing those things which I expect to do poorly".

Self-Regulation Strategy Inventory-Self-Report. Student engagement with self-regulatory behaviors was measured using the Self-Regulation Strategy Inventory-Self-Report (SRSI-SR) (Cleary, 2006; Cleary et al., 2015). According to Cleary (2006), the SRSI-SR has high internal reliability ($\alpha = .92$). The instrument included 28 items that respondents answer on a five-point scale: (1) Almost never, (2) Not very often, (3) Somewhat often, (4) Pretty often, and (5) Almost always. The SRSI-SR instrument was adapted slightly to omit mentions of "math" in questions, as well as to change "before I play video games or with my friends" to "before I play video games or *hang out* with my friends", which was adjusted to make the question more appropriate for college age students. I conducted a cognitive interview with a sophomore student

to ensure that the items are clear despite the minor modifications. The SRSI-SR has three factor subscales.

Factor 1. Managing Environment and Behavior ($\alpha = .88$) has 12 items that are used to measure the study habits of first-year college students through items such as "I make a schedule to help me organize my study time", "I try to study in a quiet place", and "I quiz myself to see how much I am learning during studying".

Factor 2. Seeking and Learning Information ($\alpha = .84$) measures study habits and help-seeking behaviors through statements such as, "I make pictures or drawings to help me learn concepts" and "I ask my teacher questions when I do not understand something".

Factor 3. Maladaptive Regulatory Behavior ($\alpha = .72$) measures dysfunctional behaviors by statements such as, "I let my friends interrupt me when I am studying" and "I avoid asking questions in class about things I don't understand". To facilitate comparison with prior research, the subscale was recoded to Adaptive Regulatory Behavior, such that higher scores represent adaptive behaviors.

Open Response Question. A single open response question was included to capture student's engagement with self-regulatory behaviors: "What are your favorite strategies for studying?"

Faculty Survey

The faculty survey (see Appendix C) included one instrument and two open-response questions to address research questions three and four. The faculty survey included items related to Academic College and years of college teaching experience. Since the faculty survey draws on a small population ($n = 34$), the scales are purposefully broad to avoid the risk that identities could be deduced from responses.

Teacher's self-efficacy for student-oriented teaching. The Teacher's self-efficacy for student-oriented teaching instrument (SE-SOT) (Kilday et al., 2016) included 12 items with high internal reliability ($\alpha = .94$). Participants responded to each item on a 10-point scale, indicating their degree of certainty as a percentage between 10% and 100%. The SE-SOT measures the extent of faculty confidence with facilitating a student-oriented learning environment that promotes the development of SRL. This environment occurs when teaching practice aligns with motivation theories by making learning relevant to students and by fostering student ownership of the learning process (Beishuizen, 2008; Kilday et al., 2016; Paris & Paris, 2001). Participants reported the degree of certainty with statements such as, "create opportunities for students to make choices about their learning" and "help students to monitor their own performance appropriately".

Open Response Questions. The faculty survey included two open-response questions as qualitative measures. The first open-response question related to faculty perceptions about students' difficulties with learning, which related to student engagement with self-regulatory behaviors: "What are the top challenges that your students typically encounter in your course? In other words, what things are hard for them as they attempt to complete assignments, tests, or projects?" The second open-response question asked faculty to share the extent that they coach students to self-regulate their learning: "To what extent do you ask students to monitor their actions and/or use of strategies when completing activities? Can you share specific examples?"

Faculty Interview

Instructor self-efficacy for student-oriented teaching and the instruction of SRL strategies were also captured in semi-structured one-hour interviews. The interview protocol addressed instructor knowledge about SRL, perceptions about how students self-regulate, and ways that

they instruct students about SRL strategies. Example questions included: "Is there anything you can do to try and motivate your students?" and "To what extent do you teach strategies that help your students to complete assignments, projects, or classroom-based learning activities?" The interview protocol also addressed a learning environment supportive of SRL through questions such as, "How do you provide students with opportunities to make choices in learning activities?".

To improve the credibility of the interview protocol, the protocol was reviewed by and discussed with the dissertation advisor. In addition, I employed the interviewing the investigator procedure (Chenail, 2011), in which I was recorded responding to the interview questions in advance of the interview process. Third, during the interviews I employed member checking (Guba, 1981; Shenton, 2004), such as by paraphrasing some of the interviewees' responses and by asking follow-up questions to clarify their answers.

Procedure

The following sections outline the procedures used to recruit participants, collect data, and analyze the data.

Participant Recruitment

For both faculty and student surveys, the recruitment email defined the purpose of the research and included the following statement: "By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time."

Student Survey. All first-year students were contacted by email in September, 2021 with the assistance of the Director of New Students and Family Programs. I sent a reminder email two weeks later. The survey was closed after three weeks.

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Faculty Survey. All 34 faculty who instructed first-year experience courses were contacted by email in August, 2021 and were sent a reminder email one week later. The survey was closed after three weeks.

Faculty Interview. Three of the 34 faculty who instructed first-year experience courses were invited by email to participate in 45-60 minute interviews over Zoom. Participants were purposefully selected to achieve a variety of experience. Interviewees represented three different disciplines as well as a range of two to eleven years of teaching experience. The sampling was also one of convenience based on which faculty were willing to participate in the interviews. Participating faculty completed the Research Participant Informed Consent Form mandated by Johns Hopkins University. The recruitment email defined the purpose of the research and stated that participation was both confidential and voluntary.

Data Collection

The student and faculty surveys were administered using Qualtrics. The anonymize responses setting was used to avoid collecting respondents' IP Address, location data, and contact information. A consent statement was included at the start of both the faculty and student surveys. Survey results were deleted from Qualtrics once the surveys were closed and backed up.

Faculty interviews took place in August, 2021 in Zoom, producing audio-only recordings and transcripts. The participants were asked to use pseudonyms in advance of recording so that the transcripts would not include identifying information. The audio recordings and transcripts were saved to a password protected external hard drive. No recording was maintained on the Zoom server.

Data Analysis

Student and Faculty Surveys. I calculated descriptive statistics to examine patterns in the data (Lochmiller & Lester, 2017). This included calculating frequency distributions, measures of central tendency (i.e., mean, median, and mode) and measures of variability, such as the standard deviation. I used SPSS Version 27 to run the Descriptives function to summarize the numeric variables and compare these side-by-side. The open-ended questions in each survey were included in the qualitative analysis conducted for the faculty interviews. I employed both a priori and emergent coding to the data (Elliott, 2018). A priori codes were drawn from the codebook developed for the faculty interviews described below.

Faculty Interviews and Survey Open Questions. I reviewed and coded the interview data in two phases, including a total of five reads of the data. First-cycle coding employed elemental coding methods (Miles et al., 2014). For the first read, I practiced reflexivity (Pope, 2017) by comparing interview transcripts to my notes from the interviewing the investigator exercise. I maintained notes on this analysis to monitor my positionality and biases (Krefting, 1991). I also fixed inaccuracies in the transcripts on the first read and began to take notes on unanticipated findings to facilitate the creation of emergent codes. The transcripts were inserted into Nvivo (Release 1.5.1) for additional reads. Subsequent reads applied a priori and emergent codes to the transcripts. Second-cycle coding employed thematic analysis. A theme, "represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 82). The fourth and fifth reads involved grouping codes into themes and writing analytic memos to capture emerging findings. The dissertation advisor reviewed a portion of the coded data as an external check.

Findings

This study used a convergent parallel design to see if the survey scales triangulated with the open answers to surveys and with the interviews. In addition, emergent coding for thematic analysis was conducted to discover factors related to students' SRL not covered by the survey scales. The following four sections address each research question in turn.

Where Did the Time Go?

For the first research question on the extent that students report procrastination behaviors, I analyzed data from the student survey. In addition, concerns about student procrastination and time management emerged from data collected in both the faculty survey and interviews. In the student survey, students self-reported a relatively low tendency to identify with procrastination behaviors on the four-point scale of the 16-item Tuckman Procrastination Scale ($M = 39.84$, $SD = 10.44$, $\alpha = .83$). The scores were reverse coded to facilitate comparison with other studies that employed the Tuckman Procrastination Scale and so a higher mean denotes a higher tendency to procrastinate. The maximum possible score on the scale is 64. According to Tuckman (2005), "Generally, scores in the 57-64 range are considered high, 50-56 range moderate, and 35-49 range low" (p. 1017). The mean in this study is similar to that reported ($M = 40.51$, $SD = 8.54$) in a study with 170 undergraduate students (Howell & Watson, 2007). Meanwhile, the low mean for students at State University compares favorably against the moderate mean of 52 ($SD = 6.7$) reported by 116 college students at a large midwestern university (Tuckman, 2005). The individual items with the highest means included "I postpone starting in on things I don't like to do" ($M = 3.14$, $SD = 0.94$) and "I get stuck in neutral even though I know how important it is to get started" ($M = 2.81$, $SD = 0.94$). The wide range of scores for the overall mean (see Table 2.2) indicates that some students viewed themselves as frequent procrastinators, though students

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generally self-reported a modest degree of procrastination. However, data from faculty indicate that professors were more concerned about students' tendency to procrastinate.

Faculty characterized student procrastination as related to time management. Time management emerged as a theme in faculty responses about student challenges in the survey, as well as in all three interviews. In the faculty survey, a significant majority of responses (80%) mentioned time management as a particular challenge for first-year students. According to one respondent, students, "very rarely review their notes after each class (or even each week) as suggested, instead relying on last-minute binge studying before exams." In all three interviews, faculty expressed concern that some students find it difficult to remain consistently on track with their work. According to Helen, "They fell behind on the smaller assignments, and then by the time… the deadline for the final paper was approaching, they were like, 'oh I haven't really been working on this at all, and now I have this massive assignment that I have to complete'." The theme of time management in the faculty survey and interviews contradicts the students' scores in the Tuckman Procrastination Scale. The following sections report results on students' study habits. One finding, a lack of evidence that students distribute their studying and work on assignments, supports faculty concerns about students' time management.

Students Set the Stage for Learning

Students' survey responses provided quantitative and qualitative data to answer the second research question related to the study habits of first-year students. The student survey's open responses about favorite study strategies provided qualitative data to support thematic analysis, which resulted in four themes. In addition, the three subscales of the SRSI-SR measured how students manage their learning environment and behavior, employ study habits and help seeking, as well as report having maladaptive behaviors. The Maladaptive Regulatory

Behaviors subscale was reverse coded into Adaptive Regulatory Behaviors to facilitate comparison between the three subscales, as well as with previous research. Table 2.2 summarizes the descriptive statistics for all three subscales. The three subscales of the SRSI-SR included coefficient alphas ranging from 0.75 to 0.88 (see Table 2.2), demonstrating acceptable internal reliability as described by Cortina (1993). The means for all three subscales were lower than what was reported in previous research with undergraduate and graduate students, such as Delen and colleagues (2014). For example, the Adaptive Behaviors subscale in the present study had a mean of 3.52, compared to the mean of 3.88 for Delen and colleagues (2014).

Table 2.2

Descriptive Statistics for Student Survey

Subscale	N	Range	M	SD	α
SRSI-SR					
Manage Environment and Behavior	50	1.08-4.67	3.41	0.77	0.88
Seeking and Learning Information	50	1.75-4.63	3.44	0.71	0.75
Adaptive Regulatory Behavior[a]	50	1.38-4.63	3.52	0.71	0.78
Tuckman Procrastination Scale	46	21.00-62.00	39.98	10.44	0.83

[a]The Maladaptive Regulatory Behavior subscale was reverse coded into the Adaptive Regulatory Behavior subscale.

The quantitative and qualitative components of the analysis were compared based on the results of the thematic analysis. See Table 2.3 for a comparison of findings from both the open responses and the SRSI-SR items based on each of the four themes in the qualitative analysis. Overall, students focused on setting the stage for learning by attempting to control their learning environment. However, students were less likely to seek help or use effective study strategies. Table 2.3 addresses the following four themes: setting the stage, self-testing, reviewing again and again, and no specific strategies.

Table 2.3

Comparison of Survey Open Question and SRSI-SR Data Based on Theme

Qualitative Theme	What are your favorite strategies for studying? (open question)	Item Means from SRSI-SR (five-point scale)
Setting the stage	"Making lists of what I need to study" "Quiet place, preferably my room" "listening to instrumental music" "I like to make sure I am in a quiet environment with my headphones and make sure I have all my martials before I start or I'll get distracted later on" "Flash cards"	"I try to study in a quiet place" ($M = 4.20$, $SD = 1.03$)
Self-testing	"index cards, trivia, quizlet" "By using flashcards or looking back in the notes and reading them, then remember it in the top of my head"	"I think about how new concepts relate to things I already know" ($M = 3.68$, $SD = 1.06$)
Reviewing again and again	"Highlighting" "going over my notes" "studying my notes until I feel confident enough I know I will be able to pass" "none"	"I quiz myself to see how much I am learning during studying" ($M = 2.72$, $SD = 1.18$) "I use my class notes to study" ($M = 3.96$, $SD = 1.14$)
No specific strategies	"I don't know" "Learning and memorizing the material while in class with the teacher present, and then just winging it"	n/a

Self-regulated learners employ strategies to manage their learning environment (Cleary et al., 2015; Zimmerman, 1989). *Setting the stage* was a theme that emerged from the open responses to the student survey and was also evidenced in the SRSI-SR subscale on Managing Environment and Behavior. Whether alone, in the student lounge, or at the library, students recognized the importance of a calming environment. Some students identified a quiet environment, while a few indicated listening to music as a favorite strategy. Still another student had a ritual of managing the little details of the study environment: "I like romanticizing studying. If you lay out notes in beautiful notebooks with pretty fountain pens and a coffee, I'm always more motivated to study." This example illustrates the importance of setting the stage for effective learning by controlling the study environment. Students also reported managing their study environment in the SRSI-SR subscale on Managing Environment and Behavior ($M = 3.41$, $SD = 0.77$, $\alpha = .88$). The overall mean of 3.41 suggests that students perceived themselves as planning and managing their studying "somewhat often" to "pretty often" according to the five-point scale. Students reported that they tried "pretty often" to study in a quiet environment ($M = 4.20$, $SD = 1.03$), the highest mean for the subscale.

To a lesser degree, students identified how they plan their studying. One student responded, "I like to make a list of everything and cross out what I feel comfortable with so that I can focus on what I need to study/what I don't feel comfortable with." However, just three of the 50 respondents (6%) shared an example related to planning. Few students highlighted planning, which connects to the findings from the first research question on procrastination behaviors, including the faculty concern about time management. In addition, none of the students in the survey mentioned strategies related to spacing out their studying or distributing work on assignments across multiple days or weeks. Distributed practice is one of the best supported

learning strategies in the empirical literature (Dunlosky et al., 2013; Roediger & Pyc, 2012). Moreover, to space out their work, students need to identify when an assessment is due and then work backwards to plan the points in time when coursework will be done. This requires students to employ time management skills. Poor time management (Thibodeaux et al., 2017) and procrastination (Park & Sperling, 2012) have both been associated with students' lower use of self-regulation behaviors.

For the second theme of *self-testing*, students' survey responses to the SRSI-SR and the open question were less well aligned in that responses to the open question suggested a higher usage of self-testing than was reported in the SRSI-SR. Self-testing involves using "index cards, trivia, quizlet," or other forms of self-quizzing, to retrieve information from memory. Self-testing is well supported by research as an effective way for students to improve long-term retention of information and to metacognitively assess what they do and do not know (Dunlosky et al., 2013; Karpicke et al., 2009; Roediger & Pyc, 2012). However, on the SRSI-SR, students indicated limited use of empirically supported learning strategies, including self-testing. The two lowest item means were for the items "I quiz myself to see how much I am learning during studying" (M = 2.72, SD = 1.18) on the Managing Environment and Behavior subscale and "I make pictures or diagrams to help me learn concepts" (M = 3.04, SD = 1.18) on the Seeking and Learning Information subscale. The discrepancy could be because students do not identify the reason for self-quizzing as seeing how much they are learning. However, this would contrast with previous research, where students identified self-testing as primarily for detecting what they know, rather than for the purpose of learning the material (Hartwig & Dunlosky, 2012). In addition, self-testing was still only cited by 20% of the respondents in the present study. This practice may not be typically used, even if it is more common than other study strategies.

The relatively low mean related to quizzing oneself during studying aligned better with the third theme, *reviewing again and again*, which was based on codes related to several rote learning strategies, including rereading, repetition, and highlighting. One student's favorite study strategy was, "studying my notes until I feel confident enough I know I will be able to pass." Some students believed that rote repetition was necessary to commit information to memory, such as one student who responded, "I also have to repetitive learn because I have a hard time remembering material." The quantitative data did not necessarily support the theme of repetitive review. The highest mean for the Seeking and Learning Information subscale was, "use notes to study" ($M = 3.96$, $SD = 1.14$), but it is unclear whether this implies that students merely review their notes, or whether they actively rewrite and elaborate on their notes. The second and third themes represent the two most cited study strategies in the survey: self-testing and rereading; each was cited by 20% of the respondents. In addition to being the most popular options for survey participants, self-testing and rereading are often contrasted in the empirical literature because research supports the effectiveness of self-testing, but not rereading (see Dunlosky et al., 2013).

The fourth theme was *no specific strategies*, which encompassed student comments that reflected avoiding content that was not understood as well as responses that did not identify any study strategies at all. There were fewer responses of this nature than the previous themes, but I viewed these responses as concerning. A few students indicated "I don't know" or "not sure" as a response to their favorite study strategies. One student indicated a total reliance on learning that might occur in the classroom. That student's strategy was, "learning and memorizing the material while in class with the teacher present, and then just winging it". It is possible that follow-up questions would have jogged the memory of the few students who did not identify

specific strategies. Moreover, a limitation of self-report instruments is that respondents may interpret questions differently than the intent of the researcher (Desimone & Le Floch, 2004; Porter, 2011). However, it is of concern when students are unable to identify any specific learning strategies.

No specific quantitative evidence supported the qualitative theme of *no specific strategies*. However, two of the SRSI-SR subscales included evidence that students avoided seeking help from their professors. Help-seeking avoidance was captured by the Adaptive Regulatory Behavior subscale ($M = 3.51$, $SD = 0.71$, $\alpha = .78$). The original Maladaptive Regulatory Behavior subscale captured dysfunctional behaviors such as losing materials or waiting till the last minute to study but was recoded so that higher rating means instead represent positive behaviors. Nonetheless, students reported that they do not remember to ask their teachers questions about things that confuse them very often ($M = 2.90$, $SD = 1.18$). Moreover, the lowest item mean on the Seeking and Learning Information subscale was "I ask my teacher about the topics that will be on upcoming tests" ($M = 2.96$, $SD = 1.20$). Interestingly, the overall mean rating for Seeking and Learning Information was 3.44 ($SD = 0.71$, $\alpha = .75$), indicating that students sometimes like to use their class notes to study and to relate new concepts to prior knowledge. According to the SRSI-SR ratings, students specifically avoided seeking help from their instructors.

Coaching First-Year Students to Self-Regulate

To answer the third research question about the extent that professors coach first-year students on how to self-regulate their learning, data were collected from the open questions in the faculty survey, as well as the faculty interviews. Every faculty interview and survey response included one or more examples of strategies that instructors taught to students. These included

strategies to facilitate cognition (Pressley & Harris, 2006), which ranged across disciplines and types. For example, one instructor taught SADMEP, a mathematics strategy to isolate a variable in an equation. Another instructor encouraged active reading strategies, note-taking, and self-testing. Some faculty also facilitated the practice of metacognition. Helen highlighted, "from a project completion standpoint, planning, organizing, using to do lists, breaking things down into smaller steps… we talked about all of that." Therefore, faculty at State University invest time and energy into coaching first-year students on specific learning strategies, as well as approaches to planning learning activities. A common mechanism faculty used to engage students in SRL was the use of reflective journaling.

Faculty reported frequently encouraging students to reflect on learning strategies through journaling, a common practice in the College 101 courses. According to one survey respondent, "I have increased the amount of self-reflection opportunities for students. This primarily shows up in weekly journaling activities and in self-reflection responses when they turn in formal assignments." According to Zimmerman (2002), the self-reflection phase of SRL represents an opportunity for students to evaluate the outcome of their performance, such as by attributing a cause for a poor or good result to their own effort or to an external, uncontrollable source. Likewise, the self-reflection phase includes an affective response by the student. This will ideally include a degree of satisfaction and an adaptive response, whereby students view the outcome as an opportunity to grow and learn. It was unclear from the evidence in the interviews and faculty survey responses whether faculty were using self-reflection assignments to encourage students to attribute their performance to how hard they tried and to the strategies they used. Dryden and colleagues (2021) demonstrated that helping first-generation college students to attribute failure to factors under their control improved their subsequent academic performance. It was also

unclear whether self-reflection prompts encouraged students to have adaptive self-reactions, such as a growth mindset.

Few of the faculty mentioned that they ask students to monitor their actions and use of strategies. Only three of the 15 survey respondents touched on time management somewhat tangentially. One professor worked with students on breaking down larger tasks into more manageable parts: "I will sometimes ask students to first just graph their data and write a descriptive caption; then the next step would be to write a full Results and Discussion section that incorporates this graph." Another faculty member talked to students about how long it takes to do a reading, while a third professor encouraged students to space out the reading. These three examples involve asking students to manage time in specific ways rather than helping students to think systematically about time management. The majority of faculty responses did not include guidance on time management. In our interview, Leah remarked, "I can't recall a specific conversation about, you know, overcoming time management with students." Therefore, there was a gap between faculty expressing concern about students' time management and which types of strategies faculty taught to students. Some faculty did try to scaffold students' time management skills in specific ways, but not to the same degree that faculty highlighted time management and procrastination as a challenge for students. The following two themes, which emerged from the interviews and survey responses, relate to additional gaps in how professors coached first-year students to self-regulate their learning.

The theme of *students who need help* emerged from interviewees' perception that the students most in need of SRL guidance were less likely to take advantage of it. All three interviewees reflected on how their attempts to scaffold students as learners was more successful with students in less need of the help. According to Oscar, there is a "very big gap between those

who succeed, you know, right away, and those who need a little extra help." It becomes challenging to manage the different levels of motivation and academic preparedness. Leah used a study skills book titled *Teach Yourself How to Learn* (McGuire, 2018) and reflected that students who benefited from the resource and the associated journal assignments were mainly the students already inclined to do well. Helen remarked on this same phenomenon, identifying motivation as a factor. She said, "you know, the students who are taking advantage of extra credit are the ones who are already motivated." Helen noted that some students are merely interested to pass the class and so do not prioritize completing every single assignment. Therefore, interviewed faculty believed that the students who need help are also the students who are less motivated to engage with building their learning skills. Students are more likely to engage in a learning task if they are interested or view it as important (Cleary, 2018). Although some students at State University saw value in developing their study skills, other students may have needed additional incentive, or consideration about task value, in the early phases of certain assignments.

A self-regulated learner employs behaviors and strategies across learning phases, including prior to working on an assignment, during performance, and following completion (Zimmerman, 2002). One faculty survey respondent described this process, including goal setting, monitoring of progress, and reflection:

> I have my students complete self-reflective journal assignments that asks them to identify goals and then, later on in the semester, reflect on progress toward goals. They are encouraged to identify specific academic success strategies and/or resources such as CASA [Center for Academic Success and Achievement] or a faculty member's office hours that could help them achieve their goals.

However, faculty participants rarely characterized how they help students to monitor their use of learning strategies as a process. Faculty engaged with *the parts, but not the system*, which constitutes another theme that emerged from both the faculty survey and the interviews. There was little evidence from the interviews and survey responses that faculty viewed personal, behavioral, and environmental factors as influencing each other, or as operating in a cyclical process of self-regulated learning (Zimmerman, 2002). Students' personal views on learning influence their behavior and environment, which can in turn influence students' beliefs. Although faculty described cognitive, metacognitive, and motivational examples of learning strategies, there were no instances where a faculty member characterized strategies, or related factors such as student motivation, as operating in a reciprocal fashion (Bandura, 1986) within a system of inter-connected parts (Cabrera & Cabrera, 2015). This represented a gap in faculty thinking about SRL.

Create an SRL-Friendly Environment

To examine the fourth research question related to the extent that professors at State University perceive that they can create an environment that promotes the development of SRL, I used the SE-SOT scale to measure the extent of faculty confidence with facilitating student-oriented teaching. In addition, themes related to student choice and a welcoming environment emerged from the faculty interviews. The mean rating for SE-SOT was 95.36 ($SD = 11.82$), ranging from 70.00 to 112.00 out of a maximum of 120. This translates to an overall 78.3% level of certainty that faculty can facilitate a student-oriented learning environment. This level of confidence among participating faculty at State University was quite high compared to that of K-12 teachers surveyed by Kilday and colleagues (2016), who reported an overall mean of 82.67 ($SD = 11.60$). In terms of supporting student motivation, respondents at State University

expressed a high degree of certainty ($M = 8.50$, $SD = 0.94$) that they can create authentic learning opportunities to make knowledge relevant. In our interview, Oscar shared an example of authentic learning by describing how he used case studies to make the content relevant and interesting to students.

Faculty expressed confidence with scaffolding students' use of strategies but showed less certainty with regards to incorporating student choice in learning. In the SE-SOT, faculty expressed confidence with helping students to identify strategies to support their own learning ($M = 8.07$, $SD = 1.49$). In addition, the highest item mean was for modeling strategies that students can use in other classes beyond the academic year ($M = 8.73$, $SD = 1.16$). Taken together, faculty reported a high degree of self-efficacy with helping students to identify strategies that they can carry forward into the future. On the other hand, faculty expressed less confidence with fostering student choice in learning. The SE-SOT item with the lowest mean ($M = 6.80$, $SD = 2.15$) was for providing opportunities for students to set their own learning goals. A sense of autonomy, or self-direction, is an important aspect of intrinsic motivation (Ryan & Deci, 2000). For first-generation students, intrinsic motivation relates significantly to academic integration, which contributes to academic performance (Próspero & Vohra-Gupta, 2007). The interviews included a theme of *student choice*. In terms of providing students with freedom to make choices in their learning, Leah reported, "yeah, I'm trying to get better at that. I haven't in the past. Not that I haven't valued it." Helen also indicated that she highly values student freedom but acknowledged it is lacking in her first-year course. Certain assignments by Helen and Leah did include opportunities for student choice, such as projects students had to complete. For example, students in Leah's biology course needed to produce a public service announcement related to a particular disease. However, based on the survey and interviews,

faculty perceived that they have room for improvement in terms of creating an environment where students self-determine their learning path.

In addition to fostering student choice in learning, faculty can build a foundation to support SRL by cultivating a sense of warmth and connectedness with their students. The theme of a *welcoming environment* emerged from all three interviews. As described in Chapter 1, when faculty cultivate a positive learning environment through verbal and non-verbal communication, they support students' confidence and motivation to participate in class (Creasey et al., 2009; Sidelinger, 2010; Trolian et al., 2016). Oscar described in a quiet and earnest tone how he engaged students in need of help.

> I have had, I think, some success with some students in terms of, like, just taking students who are very quiet and very shy in class and kind of amplifying their comments when they do speak up. And my sort of approach to teaching is, and I really mean it when I go into the classroom the first day of classes… when I say, "you know there are no stupid comments. Get learning help, and if you are struggling, then let's talk beforehand, before the exam."

Oscar and Helen both described their efforts to engage with students outside of class. Helen indicated that she did more outreach with her College 101 students. When a group of students fell behind, she tried to be in touch with them on a regular basis to figure out a plan to help them catch up.

Discussion and Limitations of Research Design

The four research questions for this study collectively sought to examine the SRL of first-year students at State University. The questions examined students' tendencies to procrastinate, their study habits, the extent of coaching that faculty provide to facilitate SRL, as well as the

type of environment that faculty perceive they create, and whether this environment could support student SRL. Students reported a relatively low tendency to procrastinate overall, though a minority of respondents reported moderate to high levels of procrastination. However, faculty perceived procrastination and time management as a major challenge for first-year students. The reason for this discrepancy is uncertain, but a possible reason is that the survey respondents were not representational of students that are of concern to faculty. The sample skewed White and female compared to the overall population of first-year students and only 9% of first-year students responded to the survey. Another possible reason for the difference is that the survey is a global measure of SRL, asking students to report about their procrastination in a general way. Cleary (2015) noted that event-based measures that involve observing students in context are more effective at assessing students' specific behavior. Three findings from the student survey's open responses support faculty concerns about time management. First, no students reported that they distribute their work, which would be contrary to procrastinating. Second, although students set the stage for learning by proactively considering the study environment, few students reported planning their work. Third, a few students could not identify specific strategies that they use to study. Together, these findings from the thematic analysis support further examination of students' time management behaviors.

Students did report engaging in strategies such as managing the study environment and self-testing. The highest rating on the SRSI-SR instrument related to students' perception that they try to study in a quiet environment. However, behaviors such as finding a quiet place to read and self-testing were highlighted in a minority of responses. Students generally rated themselves as not regularly quizzing themselves to see how much they were learning. Students were just as likely to report using less effective rote learning strategies, such as rereading, repetition, and

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highlighting and a few students could not identify any specific strategies. Across the interviews, faculty indicated concern over whether the students who need help were engaging with materials and assignments related to learning strategies. Despite this concern, few faculty indicated in the interviews and survey that they monitored and provided feedback on students' use of strategies. However, faculty did report prompting students to reflect on their own strategy use through journaling, which could represent a future opportunity for faculty coaching.

Faculty in both the interviews and survey frequently indicated that they used reflective journaling to help students reflect on their strategies and to encourage students to generally engage with learning to learn. SRL journaling interventions have helped students to improve their time management (Arsal, 2010; Schmitz and Wiese, 2006; Terry & Doolittle, 2008). However, this needs assessment study did not capture detailed information about the types of prompts used by State University faculty. This gap presents an opportunity for further research. An intervention study could examine whether and how journals facilitate self-regulation among first-year students. It would be helpful to understand whether reflective journaling prompts used by faculty support different phases of SRL. For example, certain prompts would be appropriate when students are in the early stages of planning versus reflecting on the completed assignment. Chapter 3 will explore this question and will consider other intervention approaches that that have been used to support student SRL.

An important limitation of this needs assessment study was the low response rate from students (9%). The faculty response rate (44%) was more robust and offered a window into faculty concerns and their perceived role in supporting student SRL. On the other hand, the student sample size was insufficient to disaggregate the results by gender or ethnicity, and information about first-generation status and socioeconomic status were not collected. Therefore,

the needs assessment study was unable to report on group differences. In general, all students have mixed profiles in terms of their self-regulation of learning and even high performing students have gaps in their self-regulation (Antonelli et al., 2020). Specific student groups have reported particular challenges with SRL and interventions have influenced students differently. For example, the benefits of growth mindset interventions with college students have accrued conditionally to academically at-risk students, rather than to high achieving students (Dweck & Yeager, 2019; McCabe et al., 2020). Future research could help State University to target interventions appropriately by clarifying how student characteristics relate to the effects of interventions.

Chapter 3

Intervention Literature Review

Introduction

Nearly a third of State University's first-year students who started college in fall 2019 did not persist into their second year (Office of Institutional Research, n.d.). Considering the intersectionality of students' background factors, the problem of retention becomes even more critical. For example, the retention rate was only 56% for female Latinx first-generation students (Office of Institutional Research, n.d.). SRL is a factor related to college student achievement (Slanger et al., 2015; Ning & Downing, 2010; Tuckman, 2005), which relates to college persistence (Ishitani & Reid, 2015). Students from any background can have strengths and weaknesses with SRL (Antonelli et al., 2020), but since a majority of first-year students at State University in 2020 were first-generation students (Office of Institutional Research, n.d.), it is worth highlighting that first-generation students have struggled with anxiety, information processing, and use of study aides (Antonelli et al., 2020), have reported lower levels of SRL in an online learning environment (Williams and Hellman, 2004), and have exhibited a higher degree of help-seeking avoidance (Kim & Sax, 2009; Longwell-Grice & Longwell-Grice, 2008) than their continuing-generation peers.

A needs assessment study conducted at State University in fall 2021 examined first-year students' study strategies, as well as the environment and coaching provided by professors in support of SRL. Students reported a moderate tendency to procrastinate. The needs assessment study also showed that although students frequently reported using strategies to control their learning environment, such as finding a quiet place, they cited rote rehearsal strategies more often than empirically supported strategies such as distributed

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practice (Dunlosky et al, 2013; Roediger & Pyc, 2012). Moreover, only three of the 50 students surveyed highlighted planning as a favorite study strategy.

Students at State University self-reported a moderate tendency to procrastinate and did not identify planning or spacing out studying as their preferred strategies. In addition, faculty respondents characterized time management as an important concern. A majority of surveyed faculty who taught first-year experience courses in 2020 shared that time management is a major challenge for entering freshmen. Poor time management (Thibodeaux et al., 2017) and procrastination (Park & Sperling, 2012) have both been associated with students' lower use of self-regulation behaviors.

Interviewed faculty also shared concerns about how and whether they can help vulnerable students to be motivated and use effective strategies. Leah, a faculty member, felt that many students found it helpful to hear about the strategies and had the best of intentions about implementing them. She mused, "It is important for instructors to help students with that. I think we oftentimes think that they're adults… and they can regulate themselves and I've just learned that that's not necessarily true." Leah's comment shows that faculty, because they regularly interact with students and collect student work, are well positioned to assess students' readiness and willingness to learn. Faculty can play an important role in helping students to develop confidence as learners, value their learning tasks, and practice ways to become self-regulated learners.

Faculty teaching first-year experience courses have the capacity to reach students at the start of the college experience. At State University, the College 101 course (a pseudonym) is a first-year requirement and is therefore an opportunity to help all students with SRL. College 101 aims to build "effective academic foundational skills and habits, such as note

taking and study skills" (fieldnotes, January 13, 2021). All students, including first-generation students, can benefit from this skill-building. The College 101 program involves embedding learning skills in subject-based courses. College 101 is therefore not a traditional learning-to-learn course that is exclusively about study strategies. Rather, first-year students take College 101 as a disciplinary subject, such as expository writing or principles of chemistry. The curriculum is mainly focused on the content of the specific discipline but also includes components designed to help first-year students acclimate to college academics. The embedded nature of teaching learning strategies within a discipline-focused course might be a strength of the program in terms of teaching students to self-regulate.

Cobb and Bowers (1999) theorized that learning is situated within a context. In a meta-analysis of study skills interventions, Hattie and colleagues (1996) noted that interventions achieved the greatest impact when situated within a particular learning context. Students need to learn the appropriate conditions for the adoption of specific learning strategies (Weinstein et al., 2011). Therefore, embedding SRL training within discipline-focused courses, such as biology, history, or English, allows students to understand SRL as a part of learning their subjects, rather than as an extraneous add-on. In addition to considering how effectively intervention approaches can be embedded into College 101 courses, this review of the literature on interventions uses the following theoretical frameworks to guide the analysis.

Theoretical Framework

According to social cognitive theory, our sense of agency arises from our actions, our perception of how our actions impact our environment, and from vicariously observing the actions of others (Bandura, 1997). Social cognitive theory challenged the belief in behaviorism that behavior is always caused by stimuli (Bandura, 1986). Our thoughts and beliefs, according

to Bandura, do not always relate to our behaviors, nor are our behaviors consistently related to environmental stimuli. The external stimulus, in social cognitive theory, is still important, but it is a guide rather than a controller. Our future actions are also guided by forethought, where we anticipate the likely results of what we do and make plans for the future (Bandura, 1986). Bandura (1977) described task performance, vicarious learning, verbal persuasion, and emotional arousal as four sources of our efficacy to perform tasks. For example, learners greatly benefit from seeing models in the learning environment. The environment is part of a triad of influences on human functioning. The triad includes personal, behavioral, and environmental factors (see Figure 3.1) that reciprocally influence each other (Bandura, 1977, 1986, 1997). For triadic reciprocal determinism, students' beliefs will impact their behaviors, and the outcomes of their behaviors can in turn influence their beliefs. An individual's behavior can shape his or her learning environment, such as when the person chooses a quiet place to read. The learning environment can also influence the individual, such as when a professor encourages the student to try a new strategy. The reciprocal push and pull between the influences are not fixed in scope or strength (Zimmerman, 1989); a poor showing on a test (*behavior*) or criticism from a teacher (*environment*) might demoralize one student more than another (*personal*), depending on each student's self-efficacy (Bandura, 1977) or mindset (Blackwell et al, 2007).

Figure 3.1

Triadic Reciprocal Determinism
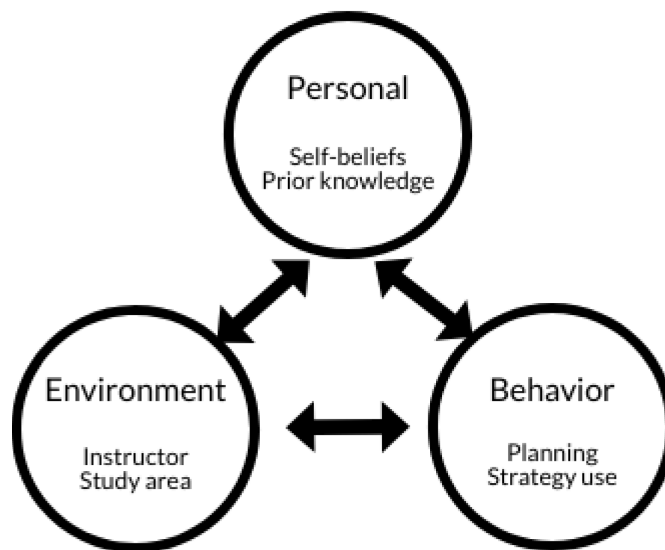
Note. Personal, environmental, and behavioral factors reciprocally influence the learning process.

As described by the theory of triadic reciprocity, students do not self-regulate their learning in a personal void (Zimmerman & Schunk, 2001). This theory guides the intervention literature review because social cognitive theory acknowledges that learning is a social and active process. Chapter 1 described environmental factors that impact student success, such as student-faculty interaction and the resources available at the university. Chapter 2 demonstrated that faculty at State University reported actively engaging with first-year students to help them learn cognitive, metacognitive, and motivational strategies. These interventions by faculty to model and support students are environmental factors that influence the thoughts and behaviors that self-regulated students generate to help themselves to achieve their goals (Zimmerman, 2002).

The social cognitive perspective on agency applies to how students self-regulate their learning. According to Bandura (1997), "If people believe they have no power to produce results,

they will not attempt to make things happen" (Bandura, 1997, p. 3). On the other hand, a self-regulated learner participates in three phases of self-regulation, including forethought, performance control, and reflection (Schunk, 2001; Zimmerman, 1989, 2002). In practice, the learner sets goals during forethought, uses strategies and monitors their effectiveness during performance, and reflects on their relative level of success. The process is cyclical; reflection leads the learner to update their strategies in the following forethought phase (Zimmerman, 2002). Learners show agency when they use forethought to anticipate and plan courses of action, as well as self-reflection to monitor how well their strategies worked out (Bandura, 1986). Strategies can relate to cognitive processes, such as how to commit information to memory and relate it to prior knowledge (Dunlosky et al., 2013). In addition, strategies can support the regulation of cognitive processes, such as following a plan and studying in a quiet environment (Zimmerman, 2002).

As triadic reciprocity determines the interplay of factors that influence learning, the SRL cycle adds the layer of time to this dynamic (see Figure 3.2). According to Schunk (2001), "The interaction of personal, behavioral, and environmental factors during self-regulation is a cyclical process because these factors typically change during learning and must be monitored" (p. 134). Each phase includes sub-processes to support the learner's achievement of the learning task. In the forethought phase, a self-regulated student conducts task analysis, which includes setting goals and making plans to use strategies to accomplish these goals (Zimmerman, 2002). In addition, the student activates prior knowledge and strategic knowledge as part of preparation (Pape et al., 2013). Getting started with the task also involves tapping into self-motivation beliefs, such as self-efficacy, interest, and expectations for the outcome (Zimmerman, 2002). In the performance phase, the student uses strategies and monitors their effectiveness.

Zimmerman (2002) described the processes of self-control and self-observation, which occur during the performance phase. Self-control involves activities to keep us on task, such as those that focus our attention and that help us complete tasks. Self-observation involves monitoring our actions so that we can learn from them. In the reflection phase, the student experiences self-judgment and self-reaction. Self-judgment includes understanding what happened and why it did, while the self-reaction includes understanding how one feels about the outcome. By self-evaluating, the student reflects on the strategies used and judges which strategies to update in the next forethought phase. The self-regulated student adopts an adaptive self-reaction based on their level of satisfaction with the outcome.

Figure 3.2

Three-Phase SRL Cycle

Three-Phase SRL Cycle
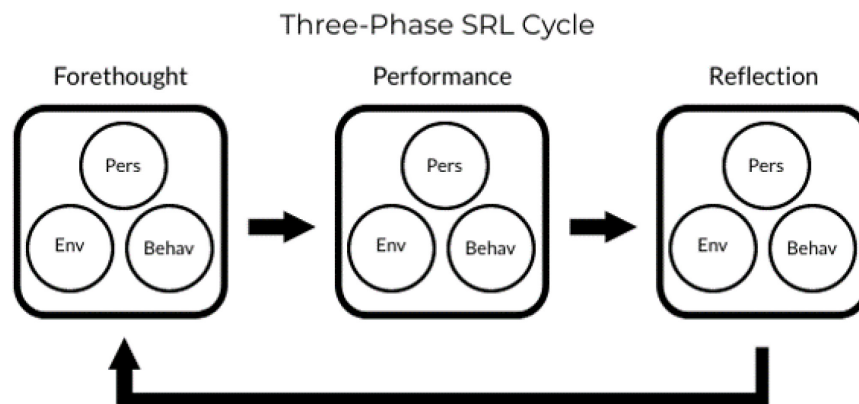
Note. The three-phase SRL cycle (Zimmerman, 2002) includes the reciprocal interaction of personal, environmental, and behavioral factors (Bandura, 1986) in each stage, from forethought to reflection.

Given the complex interaction of factors related to self-regulation, it is not surprising that students have strengths and weaknesses with SRL (Antonelli et al., 2020). A student's facility with a specific aspect of self-regulation might be at one of four levels of SRL (Pape et al., 2013;

Schunk, 2001; Zimmerman, 2002). At the observation level, the student receives instruction about SRL, most likely from the instructor, and potentially from peers and parents as well. At the observation level, students experience SRL vicariously through models and examples. As students then progress through the following levels, they experience mastery-oriented experiences to build their skills until they can, in theory, confidently transfer their SRL skills to different situations. At the emulation level, the student begins to take on the observed behaviors, but he or she is still in need of guidance and feedback. At the self-control level, the student begins to independently use SRL strategies and can use them with a greater degree of skill. If the instructor is providing scaffolding, these supports are gradually being removed until, in the final self-regulation phase, the student attains independence. The progress of these stages of SRL align with sources of self-efficacy defined by Bandura (1977).

Students' perceptions of efficacy have correlated significantly with reported strategic behaviors (Zimmerman & Martinez-Pons, 1990). In addition, the use of strategies has been associated with higher grades for high school (Zimmerman & Martinez-Pons, 1986, 1988) and middle school students (Pape & Wang, 2003). The Self-Regulated Learning Interview Schedule (SRLIS) was developed to determine the types of strategies used by high school students, as well as their frequency and consistency (Zimmerman & Martinez-Pons, 1986). Students were asked to respond to prompts related to completing an assignment. Their responses were coded according to 14 categories of the SRLIS, such as self-consequences, goal setting and planning, and seeking social assistance. Based on entrance test scores, GPA prior to high school, and teacher recommendations, students were divided into low and high achievement categories for analysis purposes. Based on students' consistency of strategy use across learning contexts, 91% of students could be accurately associated with their performance category. Pape and Wang (2003)

likewise determined that when middle school students used a variety of strategies and categories of strategies according to the SRLIS, this predicted high achievement in mathematics.

The SRL cycle includes the specific characteristics of metacognition, motivation, and strategic behavior that apply to the different phases of the learning process (Cleary, 2018; Zimmerman, 2002). Using motivation as an example, in the forethought phase the student needs to perceive value in the task at hand. During performance, the student might use self-talk and rewards to stay on task. After the student completes the task, the student will attribute a cause to the outcome that was achieved; this attribution either supports or hinders the student's level of motivation (Dryden et al., 2021; Graham, 2020). Taken together, triadic reciprocal determinism and the three-phase SRL cycle provide lenses for examining the complex interrelationship between personal, behavioral, and environmental factors in the different phases of self-regulation. The following review of intervention literature will examine approaches that aim to help students to more effectively self-regulate their learning. In addition, this chapter will explore the role faculty serve in this process.

Synthesis of SRL Intervention Literature

Faculty and researchers deploy diverse approaches to help college students self-regulate their learning. These can be considered in terms of modality, ranging from full semester learning-to-learn courses (Cambridge-Williams et al., 2013; Hofer & Yu, 2003; Tuckman, 2003; Wibrowski et al., 2017) to brief training workshops (Azevedo and Cromley, 2004; Fleming, 2002; Gebbia et al., 2019; McCabe, 2011). Some interventions focus on specific aspects of SRL, such as training on specific study strategies (Häfner et al., 2014) or on staying motivated (Dryden et al., 2021). Fewer interventions focus on the entire SRL cycle (Becker, 2013; Cleary et al., 2017; Schmitz & Wiese, 2006). The synthesis of literature that follows examines these

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diverse approaches to training students in terms of the interventions' alignment with the theoretical frameworks introduced above. This review also interrogates whether the various approaches can be incorporated into the College 101 model at State University. Following this examination of training approaches, this chapter will consider the faculty role in facilitating SRL. Since the College 101 program for first-year students is an ideal context for situating an SRL intervention, I consider the factors that could influence the faculty who teach College 101 courses to adopt the role of SRL coach, as well as the training and support that faculty would need to help them embed SRL training and scaffolding in their courses.

SRL Training

Interventions to foster the self-regulation of learning are diverse in duration and the degree to which they are situated in subject-based coursework. For example, learning-to-learn courses (Cambridge-Williams et al., 2013; Hofer & Yu, 2003; Tuckman, 2003; Wibrowski et al., 2017) are full semester courses completely dedicated to the task of strengthening students' academic skills. A semester-long course devoted to learning strategies offers faculty and students an opportunity to explore many concepts and strategies, such as cognitive and motivational psychology (Hofer & Yu, 2003), time management (Cambridge-Williams et al., 2013), critical thinking (Cambridge-Williams et al., 2013), metacognitive monitoring (Tuckman, 2003), and study skills (Hofer & Yu, 2003; Wibrowski et al., 2017). Students in a University of Michigan semester-long learning-to-learn course showed significant increases in self-efficacy (Hofer & Yu, 2003), the belief that they can be successful in an academic task (Bandura, 1977), and reported reduced test anxiety. Moreover, a full course, unlike a short workshop, provides sufficient time to put into practice a variety of strategies across the SRL cycle.

In addition to a full semester duration, a characteristic of learning-to-learn courses is that they are not situated in subject-based coursework. There is a risk that teaching study strategies outside the context of a subject will fail to transfer learning to subject-based courses (Hattie et al., 1996). Moreover, cost is a major factor. If the course is offered over the summer as a bridge course, this implies additional time and financial cost for the students and the university. As described above, it is ideal to situate SRL skills instruction within the College 101 program, which means that the intervention should operate within the context of a subject-based course.

A separate modality with a shorter duration is a brief training workshop (Azevedo & Cromley, 2004; Fleming, 2002; Gebbia et al., 2019; McCabe, 2011). A 30- to 60-minute training session provides brief, targeted instruction on study strategies. For example, in the second of two studies, McCabe (2011) divided undergraduate students into four conditions to test varying levels of instruction about empirically supported study strategies, such as dual coding, generating notes, spacing, and self-testing. The conditions included: (a) a control, where introductory psychology students received no instruction ($n = 12$); (b) introductory psychology students ($n = 50$) and 200-level cognition students ($n = 54$) received instruction on effective but counter-intuitive strategies, including spacing, testing, and generation; and (c) advanced psychology seminar students ($n = 12$) received more extensive instruction, including reading empirical journal articles on the study strategies covered. Participants were surveyed about scenarios related to the instructed study strategies. Each scenario asked students to select what they believed would be the more effective of two competing strategies. For example, in one scenario, students were asked to select between self-testing and rereading. Participants in the two treatment conditions outperformed the control group in recognizing the benefits of

testing versus restudying and in generating their own notes versus receiving notes from the instructor. The advanced seminar students who received more extensive instruction on the learning strategies performed best. However, participants who received explicit instruction about spacing versus massing still preferred massed study as an approach.

A brief SRL training supported students to self-regulate their learning of the circulatory system. Azevedo and Cromley (2004) deployed a 30-minute training with 131 undergraduate students with little to average knowledge of the circulatory system at a large mid-Atlantic university. During the training portion, students in the treatment condition were exposed to the phases and parts of self-regulation. All participants then spent 45 minutes reviewing three articles in the Microsoft Encarta digital encyclopedia and taking notes. Participants were allowed to navigate the encyclopedia, including searching and clicking on links. During this part, participants were recorded while verbalizing their intents and actions. Participants then completed a 30-minute posttest without access to notes. The researchers sought to identify participants' mental models about the heart before and following the intervention. Mental models related to the accuracy and completeness of students' descriptions of the circulatory system. The ANOVA showed that students in the treatment condition demonstrated significantly more complex mental models. Based on recorded student verbalizations, students in the SRL condition also demonstrated more planning, activation of prior knowledge, and significantly more use of drawing, summarizing, taking notes, and elaboration.

As a result of brief workshops, students have achieved useful gains, such as developing metacognitive skills to recognize the value of testing versus restudying notes (McCabe, 2011), use of planning during a task (Azevedo & Cromley, 2004) or improved help-seeking behaviors (Gebbia et al., 2019). The brief format uses a less substantial amount classroom time in a course,

which may predispose faculty to participate in an intervention (S. Adelman, personal communication, February 12, 2021). In combination with other approaches, such as ongoing coaching (Cleary, 2017) or journaling (Dörrenbächer & Perels, 2016), a brief workshop could create a foundation of knowledge to support ongoing check-ins to reinforce and scaffold students' adoption of learning strategies appropriate within their specific disciplines. However, on their own, such workshops have limitations. First, instruction might not stick after a brief intervention; for instance, students who received instruction about spacing their study persisted in preferring massed practice (McCabe, 2011). Second, it is challenging to cover multiple aspects of SRL in a short training. Students need a repertoire of strategies because their use is conditional upon the particular circumstances (Weinstein et al., 2011). SRL is a process with a feedback cycle, involving personal factors such as self-efficacy and motivation; behaviors such as strategic thinking and planning; as well as environmental factors such as the nature of the assignments, the assistance of the instructor, and the student environment. A single brief workshop involves insufficient time to address these factors systematically.

The modalities of the learning-to-learn course and the brief workshop stand at opposite ends of a spectrum in terms of duration. The learning-to-learn full-semester course offers a substantial enough amount of time to treat SRL in a holistic manner, but the context for the intervention is the College 101 program, an existing first-year course with a subject-based curriculum. Since much of the curriculum will focus on subject matter such as biology, expository writing, or U.S. History, the intervention cannot replicate the breadth and depth of learning strategy instruction possible in a full semester learning-to-learn course. A short workshop provides insufficient time to treat SRL as a process (Zimmerman, 2002) with

personal, behavioral, and environmental factors at work in a reciprocal relationship (Bandura, 1977). The intervention modality needs to combine the advantages of both modalities by employing a modest footprint across the semester.

Addressing Components of SRL

Self-regulated learners believe that they can succeed, regulate their motivation, employ strategic behaviors, and use metacognition to plan, monitor, and reflect on their work (Pape et al., 2013; Schunk, 2001; Zimmerman, 1989). Interventions have addressed specific components of SRL, such as fostering a growth mindset (Aronson et al., 2002), or teaching students effective note-taking strategies (Daher & Kiewra, 2016). The following sections highlight interventions related to motivation, metacognition, and study strategies. Afterwards, Addressing the SRL Cycle will examine interventions that treat these factors in a holistic manner, as part of the SRL cycle (Zimmerman, 2002).

Motivation

Attribution retraining and interventions to foster a growth mindset are two of the ways that have been employed to support college student motivation (Aronson et al., 2002; Dryden et al., 2021; Fink et al., 2018; Hamm et al., 2017; Yeager et al., 2014). For students to experience a sense of agency in learning, it is helpful for them to perceive that learning is both under their control and subject to improvement (Graham, 2020). It is therefore important for students to have an internal locus of control. Stupnisky and colleagues (2011) examined factors related to first-year college students' causal search, finding that students were most likely to ask why a particular outcome was achieved when the results were unexpected, negative, or important. Unfortunately, students were more likely to attribute the result to ability rather than effort, and to feel shame and helplessness. The authors pointed out that one

reason for this could be that students were not being guided towards adaptive attributions.

Interventions to help college students make adaptive attributions have helped students to view their performance as under their control and have contributed to improved course grades (Dryden et al., 2021; Hamm et al., 2017). Hamm and colleagues (2017) employed an attributional retraining (AR) treatment with college students at a research university in western Canada. The 806 participants were divided into two treatment conditions in this online, pre-post, quasi-experimental, randomized study. Independent samples t-tests determined no significant differences between the treatment groups in terms of demographic and psychosocial characteristics. Students' cognitive elaboration was measured via a scale with six items to differentiate between low and high elaborators. Elaboration was defined as, "(a) being aware of relevant, existing knowledge and (b) deeply reflecting on how such knowledge relates to new information so as to understand and apply novel material" (p. 602). The one-hour intervention, administered after the prequestionnaire, included three phases for both conditions: (a) causal activation to reflect on the causes of previous successes and failures, (b) a narrated 15-minute presentation, and (c) consolidation in the form of an elaborative writing task. The AR treatment's video advocated the value of attributing outcomes to internal, controllable causes. The second treatment included a video presentation on stress reduction. Four months later, a second questionnaire examined students' attributions and perceived control. The following month, the researchers collected grades from a final test for the introductory psychology course. Simple slope regression analyses found no treatment effect for high elaborators, but low elaborators in the AR treatment outperformed the stress reduction treatment group on the test. In addition, the low elaborators in the AR treatment group evidenced reduced uncontrollable attributions, signifying that they increasingly viewed

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outcomes as being under their control.

For first-generation students, an internal locus of control contributes to college adjustment even more significantly than for continuing-generation students (Aspelmeier et al., 2012). Dryden and colleagues (2021) hypothesized that first-generation students with low perceived academic control would benefit from AR in the form of higher grades and increased attribution of outcomes to factors under their control. Participants included 765 first-year students (43.5% first-generation) at a research university in western Canada. Seventy percent of the participants were randomly assigned to the treatment, which involved an initial reflection on the causes of recent academic achievements, the viewing of a video promoting controllable causes for setbacks, followed by participants writing up what was learned from the video. Students in the control instead watched a video related to the content of the course. Five months later, participants completed a questionnaire to rate their perceived academic control. In addition, students reported their high school grades, and their final course grades were reported by the instructor. Recipients of the AR achieved more highly than the non-AR control group in the two-semester course in which the intervention occurred, and AR participants were less likely to withdraw from the course. The AR treatment did not make a difference for first-generation students who started with high perceived academic control, which is consistent with Hamm and colleagues' (2017) finding that AR specifically helped low elaborators.

Just as interventions to support college students with attribution were conditionally beneficial for certain students, interventions to foster a growth mindset were beneficial for some participants, namely underrepresented minority students (Aronson et al., 2002; Fink et al., 2018; Yeager et al., 2014). Aronson and colleagues (2002) investigated whether writing

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letters to middle school students would reduce stereotype threat among college students, as well as lead to a more malleable view of intelligence. The 79 undergraduate participants at Stanford University were randomly assigned to one of six conditions, which crossed race (White and African American) with three treatment conditions: malleable pen pal, control pen pal, or non-pen pal. The participants in the two pen pal conditions received a letter from a middle school student in which the student described his or her challenges at school. Participants in these conditions produced two letters and a speech across three sessions. In the letters and speech, participants provided encouragement to their middle school pen pals. Participants in the malleable pen pal condition in particular were encouraged to describe intelligence as malleable. To support this message, participants viewed a brief video clip supporting this view. Two questions on a six-point scale measured participants' views on the malleability of intelligence. The items were highly correlated, resulting in an index of malleability that was used in a 2 X 3 ANCOVA to analyze treatment effects. In addition, at year's end students answered additional Likert scale questions related to stereotype threat, academic identification, and enjoyment of academics. Grade transcripts were provided by the Registrar. As a result of the intervention, the participants themselves demonstrated a growth mindset. African American students in particular also achieved higher grades. The intervention did not achieve the desired reduction in stereotype threat, but views about malleability of intelligence persisted one year later for the intervention condition and remained fixed in both control conditions (control pen pal and control non-pen pal). Despite an improved outlook on academics and improved grades, African Americans lagged White students on both measures, showing a persistent racial gap.

In another intervention that provided content to students about the malleability of

intelligence, Fink and colleagues (2018) sought to assess whether a growth mindset intervention would reduce the achievement gap experienced by female and underrepresented minority students in college chemistry. Participants included 565 first-year students in an introductory chemistry course. Students were randomly assigned to treatment and control conditions. The treatment read an article about the malleability of the brain, while the active control read an article about tips for successful transition to college, including time management, work and health balance, and being active participants in learning. For both conditions, participants subsequently completed two reflection assignments in advance of high stakes exams. According to ANCOVA and regression analyses, the growth mindset intervention uniquely benefited minority students, successfully eliminating the achievement gap in the chemistry course. White and female students did not out-perform students in the control. Since there was no achievement gap between male and female students in the study, the authors indicated that this study is consistent with previous research with college students (see Sisk et al., 2018) that growth mindset interventions selectively support the performance of underrepresented minority students. A primary theme that emerged from the reflections of treatment participants was the value of generative learning, which the authors argued strengthened the case for a growth mindset intervention to encourage students to use effective strategies rather than just work hard.

In addition to presenting students with content about the malleability of intelligence and then asking them to write about it to other students, faculty can foster a growth mindset through feedback. Yeager and colleagues (2014) used three double-blind randomized field experiments to study whether the "wise feedback" strategy would impact African American middle school and high school students' mistrust of feedback, lead students to incorporate

feedback, and improve the rate at which new drafts of work would be submitted. In addition, the authors examined whether the wise feedback, which involved asserting a high standard, and a belief that students could rise to the standard, would impact performance and reduce the achievement gap between African American and White students. In Studies 1 ($N = 44$) and 2 ($N = 44$), middle school students reported their perceptions of whether school was fair for them and for students sharing the same race. Trust was also measured 2.5 months following the intervention in each study to check the longitudinal effect of the intervention. Study 1 included a measure of how many students revised their essays following feedback. Study 2 also examined the quality of revisions. Study 3 asked 76 high school students to interpret feedback provided to a hypothetical student following a treatment or control activity. The treatment group read a testimonial from a student highlighting the value of a high standard and receiving feedback. For example: "Just like in sports, you need that critical feedback to get excellent" (p. 817). For all three studies, African American students experienced positive and significant effects from the treatment, while White students showed a positive but insignificant trend. In study 1, none of the students in the control group revised their papers, but 82% of the students in the treatment did so. In Study 2, African American students in the treatment condition also showed greater motivation to revisit their essays. In addition, the treatment group incorporated more than twice as many changes into revised essays. For both studies, low-trust African American students in the treatment exhibited higher trust postintervention. For Study 3, a preintervention racial achievement gap was cut by almost 40% for the treatment condition. Moreover, African American students in the treatment were far more likely to attribute the hypothetical feedback to high standards and teachers' belief that these could be attained.

Students' motivation to engage in learning includes multiple personal factors that influence their behaviors and how they interact with their environment. Interventions to support growth-oriented mindsets and build student confidence in learning have supported student performance, particularly for students from racial minorities (Aronson et al., 2002; Farrington et al., 2012; Fink et al., 2018; McCabe et al., 2020; Yeager et al., 2014). A malleable view of intelligence can be useful across all three phases of self-regulation; students in the forethought, performance, and reflection phases can view their lack of understanding or setbacks in performance as opportunities to improve. An internal locus of control that attributes outcomes to controllable causes, such as the strategies used, is helpful for students in the reflection phase. Attribution retraining helps at-risk students in particular (Dryden et al., 2021; Hamm et al., 2017). If at-risk students believe that they have the capacity to improve through effort, and if they believe that their strategic behaviors are a factor in their success, they might be willing to use metacognitive strategies to monitor and reflect on their strategic behavior.

Metacognition

Students' understanding of how they learn, their assessment of what they currently know, and their knowledge of which strategies are appropriate to use in different situations are categories of metacognitive knowledge (Flavell, 1979). When students have misconceptions about how they learn and which strategies will help them to succeed (Karpicke et al., 2009), or when students incorrectly assess their mastery of a specific topic (Isaacson & Fujita, 2006; Serra & DeMarree, 2016), their metacognitive knowledge becomes a barrier to success. Demo and Seli (2004) surveyed students two thirds into a learning-to-learn course to determine why college students might resist changing their learning behaviors. Of the 169 respondents, 29% reported

that they did not intend to change their behaviors as a result of the course. The most popular reason (67%) was "I don't want to change". Follow-up conversations revealed that many believed they could succeed without the learning-to-learn course. Interventions to support metacognition seek to address these challenges by helping students to collect data about how their beliefs and behaviors connect to their academic performance, which can help students to make more informed choices (Häfner et al., 2014; Nietfeld et al., 2006). Therefore, supporting students to improve their skills and behaviors with metacognition is an essential part of helping them to self-regulate.

Metacognitive monitoring involves keeping records of one's thoughts and behaviors related to learning. Nietfeld and colleagues (2006) investigated whether distributed metacognitive monitoring and feedback would improve college students' calibration of confidence judgments related to answering questions. In addition, academic performance and self-efficacy were assessed for both the treatment and comparison groups. Eighty-four undergraduate students in two educational psychology courses participated in the study. The intervention asked students in both the treatment and control conditions to report their confidence judgments for four multiple choice tests. The treatment group also monitored their learning at the end of each weekly class to judge their understanding of that day's content, declare which concepts were challenging and what they could do to address their challenges, and respond to three review questions with answers and confidence judgments about those answers. Students in the treatment were given feedback about the accuracy of their judgments. Measures included a pre test related to course content, an educational psychology self-efficacy inventory, a section of the Raven Advanced Progressive Matrices Test to assess group differences, test performance, and performance on a course project. No significant

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differences were found between the treatment and control groups based on the psychology pretest and the Raven test. Repeated measures analysis of covariance was performed to assess the intervention's effect on performance. The treatment group outperformed the comparison by one standard deviation on both the calibration exercises and the multiple choice tests starting with the second test. The treatment group also outperformed the control on a project completed at the end of the course, which the authors characterized as a "more authentic, performance-based" (p. 174) measure. The intervention used very little instructional time, making it an efficient approach to achieve improved monitoring skills and academic achievement.

Metacognitive monitoring has also been used to address time management issues. Time management interventions attempt to help students reflect on their approaches to learning in terms of time usage and procrastination (Häfner et al., 2014). This approach could address a finding from the needs assessment study described in Chapter 2 that students at State University did not identify spacing out their work as a particular study strategy. Häfner and colleagues (2014) used a time management intervention to address procrastination to help undergraduate students at a medium-sized German university to distribute their work on an important task with a deadline. The randomized control trial with active control included four-hour training sessions. The control group received information about time management and participated in discussion. The intervention group spent two of the four hours practicing time management, including identifying steps and potential obstacles. The intervention group also learned to keep a daily diary for tracking and planning. All participants identified an important task with a deadline in approximately four weeks (96% chose an upcoming exam) and were asked to track time spent on this task over four weeks. Results of an ANOVA

comparing both groups based on weekly time spent on the learning task showed that although both groups spent the same total time across all four weeks, the active control group substantially increased time spent in the last week. The treatment group's time per week remained more consistent. Therefore, the treatment group distributed time spent on studying across the four weeks.

A separate time management intervention by Stevens and colleagues (2019) focused less on monitoring behavior over time and instead relied on training students to use planning tools. The study investigated the effects of an organization, time management, and planning (OTMP) intervention on first-year college students enrolled in a program for students admitted with low GPA or ACT scores. Sixty-six students were either part of courses participating in the treatment condition or an active control. The treatment consisted of three one-hour OTMP training sessions that included time awareness through the use of planning tools, such as the use of a calendar, to-do lists, and "time cracks" (p. 209), which are gaps in one's schedule that can be filled with brief tasks. The second session included breaking large tasks into smaller parts and students using self-consequating behaviors to stay motivated. The third session covered setting priorities based on task urgency and importance. Pre and post measures were administered 5-7 weeks into the first semester and then during weeks 12-16 using the Barkley adult ADHD rating scale-IV, the Weiss functional impairment rating scale, the Organization, Time Management, and Planning (OTMP) measure and the Barkley Deficits in Executive Functioning scale. A grade differential index was used to measure academic performance, "dividing the difference between the grade the participant earned and the class mean by the standard deviation" (p. 208). Results were mixed. At-risk first-year students in the treatment self-reported less overall impairment in relation to family, life skills, self-

concept, as well as decreased inattention severity compared to the control groups. However, the treatment group did not score statistically significantly higher on OTMP skill use, executive functioning, get higher grades, or remain enrolled in classes to a greater extent than the control. Sample size was a limitation and participants were not randomly assigned. Executive functioning and school impairment progressed in a positive direction for the treatment group, so the authors wondered whether sustained help could have helped to improve other outcomes.

The question of adequate dosage also arose in a study to address procrastination. Gustavson & Miyake (2017) were unsuccessful in reducing students' self-reported procrastination. Of interest, the study limitations included the brief duration of the intervention. The authors believed that a lengthier intervention with scaffolding might have achieved a greater effect. Instructor scaffolding is important because left to their own devices, students do not consistently self-monitor (Lan, 2005). Lan (2005) investigated the self-monitoring strategies used by students at different levels, from elementary to graduate, and for tasks of varying importance, including between classes, preparing for a quiz, and preparing for a final exam. The participants included 510 students (134 in 4th-6th grade; 111 in 7th-8th grade; 133 in 10th-12th grade; 58 undergraduate; 74 graduate). Participants answered three open questions related to the three levels of importance. Inductive coding produced 13 categories; six of these represented self-monitoring (self-testing, being tested by others, over presentation, elaboration, systematic rehearsal, and reviewing past performance). Across age levels, participants used more self-monitoring to prepare for quizzes and exams than self-monitoring between classes. Older students tended to report a greater degree of self-

monitoring than younger students. However, even graduate students did not consistently self-monitor for a task as important as a final exam.

Interventions to support self-monitoring have sometimes shown mixed results (Gustavson et Miyake, 2017; Stevens et al., 2019), but have also resulted in students distributing their schoolwork (Häfner et al., 2014) and helped students to calibrate their judgments of learning (Nietfeld et al., 2006). The question of making accurate judgments of learning connects to the next section on study strategies, as students asked to use effective strategies such retrieval practice and distributed learning incorrectly judged rereading and massed practice as more effective (Blunt & Karpicke, 2014; Kornell, 2009).

Study Strategies

A literature review about the relationship between non-cognitive factors and academic performance defined learning strategies as, "processes and tactics one employs to aid in the cognitive work of thinking, remembering, or learning" (Farrington et al., 2012, p. 10). There are learning strategies situated in particular disciplines, such as strategies for writing, language acquisition, and mathematics (Pressley & Harris, 2006). Pape and Wang (2003) highlighted strategic behaviors for solving mathematics problems, such as "use objects/manipulative materials to model problem for understanding" and "look for clues in the problem that will help me to solve it" (p. 441-448). Certain strategies can apply across disciplines, such as strategies to support cognitive processes of committing information to memory and relating it to prior knowledge. These include strategies such as distributed practice, elaboration, and retrieval practice (Dunlosky et al., 2013). In the needs assessment study reported in the previous chapter, a fifth of students reported examples of retrieval practice, such as self-testing and flash cards, whereas no one highlighted examples of spacing out or distributing

their schoolwork. This section examines literature related to distributed practice and retrieval practice, two of the types of strategies best supported by empirical literature (cf. Dunlosky et al., 2013; Roediger et Pyc, 2012; Weinstein et al., 2019). Distributed practice and practice retrieval could appropriately be included in a learning strategies module assigned to College 101 courses that cross diverse academic disciplines.

Distributed Practice

Distributed practice, also known as spacing, is an alternative to the familiar college practice of cramming, which involves studying for a concentrated (or massed) duration shortly before an exam or assignment is due. Distributed practice, on the other hand, involves spreading out the studying across days and weeks. This effective approach relates to the SRL forethought phase because distributed learning involves thinking ahead and planning one's schoolwork. Li and colleagues (2021) examined whether freshman students in a computer science course would perform better if encouraged to distribute coding practice. A software program was used to generate multiple choice practice questions in which feedback was instantly provided. Students could retry multiple times or request the correct answer. Participants included 200 first-year undergraduate students in China, divided evenly into treatment and control conditions. For the duration of the semester, participants in both conditions were prompted to access the practice questions generated daily in the app. If an individual skipped a day, they could return to its specific set of questions later. The treatment group was advised to do fewer questions per session, but at a higher frequency than the control. Academic performance was measured by a midterm and final exam. Behavior in the practice app was also tracked. Lag sequential analysis was used for the participant behavior in completing practice questions. Students in the control group completed far fewer questions, leading the researchers to omit from analysis students who

completed fewer than 70% of the questions. ANCOVA was performed to examine between-group differences on the exams. Significant differences were found in favor of the treatment group. In terms of behaviors in the app, treatment participants were more likely to spend a longer amount of time on questions and answer correctly on the first try. In addition, the treatment group was more likely to keep working on a question answered incorrectly. The authors surmised that answering fewer questions on a given day may have encouraged the students to engage with these more deeply. Although a calendar in the app attempted to encourage distributed learning, it was prompting encouragement from the teaching assistant that was more influential in encouraging students to distribute their practice.

A separate intervention to support distributed practice had mixed results. Crissinger (2015) examined whether it is preferable for students to complete statistics homework in a distributed way, by including questions from across current and previous topics, rather than having students only complete questions from the current topic. The participants included 241 introductory statistics students at a large university in the eastern United States. Each of the course's 27 homework sets had ten questions. Students were randomly assigned to massed and distributed conditions. The students in the massed condition were presented with ten new questions each homework, reflecting the section just covered. The students in the distributed condition answered five new questions and five questions reflecting content covered in previous weeks. A Welch's t-test compared the groups on a final exam. Although mean scores were higher for the distributed group, it was not statistically significant. The students were distributed across two professors and on secondary analysis, the students in the treatment taught by one professor outperformed the massed group in a statistically significant way, but the students taught by the other professor performed better in the massed condition.

Retrieval Practice

Taking opportunities to practice retrieving information and procedures from memory is, like distributed practice, well supported in the empirical research literature (see Dunlosky et al., 2013). Retrieval practice involves testing oneself by generating answers from memory. Examples include prompts with flashcards (Kornell, 2009), writing out paragraphs, and making concept maps (Blunt & Karpicke, 2014). Blunt & Karpicke (2014) compared two formats for practicing retrieval, including by writing a paragraph and by creating concept maps. Following a review of brief educational science texts, participants in both conditions had to construct their output from memory. Across the two experiments in the study, students' judgments of learning were also examined. Experiment 1 included 32 University of Purdue undergraduate students. The participants studied one text and then practiced retrieval by creating a paragraph from memory. The participants subsequently studied a second text on an unrelated science subject and practiced retrieval by making a concept map from memory. Students were also asked to rate their enjoyment of each activity and estimate how much they would remember one week later. Responses were scored based on how many ideas were generated in each condition during the recall tasks. Students were then tested one week later. Experiment 2 (N = 80) replicated the procedure but added two new conditions to contrast the retrieval-based conditions with making paragraphs and concept maps in the presence of the text. Practicing retrieval via paragraph or concept map were equivalent in producing recall one week later. In terms of the number of ideas generated during the retrieval tasks, concept mapping produced fewer ideas than writing paragraphs. However, in considering the discrepancy, the authors determined that concept mapping did result in participants presenting the same number of important ideas from the texts, and so the authors supposed that concept mapping may have implicitly produced the same

amount of recalled ideas during retrieval. In Experiment 2, these results were replicated and the retrieval conditions were compared with writing paragraphs and making concept maps in the presence of the text. Recall was superior in both retrieval conditions and once again both retrieval conditions produced equivalent recall. However, students' judgments of learning inaccurately predicted that they would perform better if they did the tasks in the presence of the text.

Retrieval practice can be usefully combined with distributed practice. Kornell (2009) compared the use of spacing and massing flash card studying across three experiments. Participants for all three within-participant experiments were undergraduates at the University of California, Los Angeles (UCLA). Participants were assessed in terms of performance on a test, judgments of learning, and amount of time spent studying the electronic flash cards in the online environment. Experiment 1 (N = 20) examined within-session spacing by asking participants to review four times in a row one large stack of twenty flash cards containing words and synonyms. Then, participants examined four smaller sets of five flash cards four times each. The smaller decks were the massed condition because each five-card deck was presented four times consecutively before shifting to the next set. On the second day, all of the flash cards were presented as a test. In Experiment 2 (N = 25), the spacing condition involved a review of a single twenty-card deck twice. The massing condition involved reviewing a five-card deck eight times. Over four days, the spacing condition repeated review of the same twenty flash cards, while the massing condition showed a separate set of five cards eight times on each day. On the fifth day, the participants were tested on all 40 cards. Experiment 3 (N = 25) was the same as Experiment 2 except that an added fifth day was included to review all flash cards, with the test shifted to the sixth day. In all three experiments, the participants significantly performed better on questions

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related to flash cards presented in the spacing conditions. Experiment 1 showed the value of within-session spacing, whereas Experiments 2 and 3 reflected between-session spacing. In all three experiments, students predicted that they would perform better on the massed flash card words in the forthcoming test. There were no significant differences in study times between the spacing and massing conditions. Across all three experiments, 90% of students benefited from spacing the flash cards, but 72% nevertheless thought that massing was more effective.

Addressing specific components of SRL, such as helping students to improve their predictive accuracy in selecting strategies (McCabe, 2011), or teaching students a particular study strategy such as spaced retrieval practice (Kornell, 2009), can support students' self-regulation and performance on assessments. However, a greater impact could potentially be achieved by treating the components of SRL as interrelated and influencing each other reciprocally. In a literature review of noncognitive factors related to academic success, Farrington (2012) identified that some studies about study strategies failed to address students' motivation to use the strategies, assuming that students will "see the value of participating in the additional tasks and putting forth the additional effort required to utilize strategies to improve learning" (Farrington, 2012, p.44). Therefore, an intervention design focused on strategy use could mitigate risks to success by incorporating motivational and metacognitive factors. In addition, the following section will examine how an intervention design could incorporate all three phases of SRL, including forethought, performance, and reflection. In so doing, an intervention could address the entire lifecycle of a major assignment or exam. Ideally, an intervention would include multiple assignment cycles so that students could practice and receive scaffolding to help them to work towards greater independence in self-regulated behaviors.

Addressing the SRL Cycle

The previous section discussed interventions focused on specific motivational or metacognitive factors, such as attribution retraining (Dryden et al., 2021) or metacognitive monitoring (Nietfeld et al., 2006). In addition, interventions have focused on particular study strategies, including distributed practice (Crissinger, 2015). Fewer interventions have focused on the entire cycle of SRL, including forethought, performance, and reflection phases. It is important to track students' progress over time because progress in developing SRL skills can be uneven and require a longitudinal approach (Becker, 2013; Fung et al., 2019). Becker (2013) used a quantitative quasi-experimental design to assess whether SRL interventions in introductory accounting courses would relate to performance on four exams and a comprehensive exam, and whether prior ACT scores and GPA would mediate the results. One-hundred and twenty-one students participated in the control, receiving traditional instruction by a single instructor. The following semester, the same instructor taught three sections as part of the intervention, including 123 students. The treatment included SRL interventions related to Zimmerman's (2002) cycle of forethought, performance, and self-reflection. For example, to support forethought, the instructor presented course objectives and advanced organizers in each class. To support performance, students completed one-minute papers for self-monitoring and they completed preexam self-assessments. Finally, postexam self-reflection activities asked students to consider how they performed on the exam and which strategies could help them to improve. There were no significant differences between the control and treatment groups on the first two exams. On the third exam, students in the treatment with high ACT scores outperformed the control, but students with low ACT scores in the treatment performed worse than the control. However, on the fourth exam, the treatment

group broadly and significantly outperformed the control (regardless of ACT scores). Finally, the treatment group modestly outperformed the control on the comprehensive exam. Although initial findings supported intervention benefits only for high performing students, low performing students also outperformed the control group in later assessments.

Longitudinal data collection provides valuable insight into students' development of SRL over time. Fung and colleagues (2019) collected weekly data from a learning journal across nine weeks. In addition to open-ended questions related to the curriculum, the authors employed questions using a five-point Likert scale that ranged from strongly disagree to strongly agree to measure study planning, perceived sufficiency of study time, perceived sufficiency of study effort, and students' perception of understanding the course topics. Study plan, study effort, and study time showed positive trends across the nine weeks measured, with statistically significant improvements for study plan and study effort mean scores. Time series analysis showed that progress was not linear, underscoring the value of measuring SRL across time and using context-specific data collection. Together, the studies by Becker (2013) and Fung and colleagues (2019) suggest that some students will learn SRL more quickly than others and it is helpful for faculty to provide ongoing scaffolding to support all students. If an intervention takes a single snapshot of students' self-regulation at one moment in time, it would fail to capture how SRL dynamics change over time (Järvenoja et al., 2015; Johnson et al., 2011).

An intervention that follows the entire lifecycle of a major assignment or exam has the potential to include all three phases of SRL, including forethought, performance, and reflection. The following example showcasing the Self-Regulation Empowerment Program (SREP) (Cleary & Zimmerman, 2004; Cleary et al., 2017) provides another example of an

extensive treatment of SRL across a semester. Cleary and colleagues (2017) assessed the effects of SREP with seventh-grade students in the United States. The program involved individual or small group coaching to help students reflect on their learning struggles, to address their challenges, and to monitor their progress in using and updating strategies. SREP used feedback loops to encourage forethought, performance control, and reflection for short-term assessments, such as weekly quizzes, and for larger assessments, such as unit exams. The model reflects social cognitive theory (Bandura, 1977; 1986; 1997) by recognizing personal factors while also influencing behavior and environmental factors. SREP is an intensive program, including 15 hours of initial training for coaches, plus ongoing coaching throughout the program. Students received several 25-minute coaching sessions each week for three to four months. Data were collected prior to, immediately following, and two months after the intervention through a combination of global and situation-specific measures. Global measures included the Self-Efficacy for Self-Regulated Learning scale and the Maladaptive Regulatory Behaviors subscale of the SRSI-SR. Situation-specific measures included microanlytic questions related to attribution and adaptive strategies, as well as a scenario prompt to elicit a list of strategies. There were no significant between-group differences for global measures of self-efficacy and maladaptive regulatory behaviors, but there were significant differences postintervention and in a two-month followup for microanalytic measures of attribution and adaptive inferences. In terms of mathematics achievement, although there were no significant between-group differences, the SREP group showed steady z-score gains over time, which were not exhibited by participants in the control group.

A program such as SREP recognizes that developing SRL skills and behaviors will take time and involve scaffolding and mentoring along the way. However, Cleary and

Zimmerman (2004) noted that the SREP coaching model is designed for working with individual students, and therefore teachers may find it challenging to apply the approach to a whole class setting. The approach may not be scalable to the entire College 101 program at State University. One aspect of the approach that the College 101 program can potentially adopt is the use of microanalysis. The microanalytic approach involves examining students' specific and context-based learning strategies, rather than relying on students' global self-report ratings of self-regulation (Cleary & Zimmerman, 2004; Cleary et al., 2017). According to Bembenutty (2011), the microanalytic approach's "uniqueness rests in the use of multiple assessment tools to assess students' task-specific motivational beliefs, self-regulatory processes, and use of specific learning strategies" (p. 121). The researcher or instructor uses a structured interview protocol to record students' reflections about specific situations or tasks, rather than relying on measures that capture SRL as a "global, fixed entity" (Artino et al., 2014 p. 281).

A more scalable approach that can incorporate SRL phases, as well as include monitoring of situation-specific tasks, is the use of journals, diaries, and minute papers (Almer et al., 1998; Arsal, 2010; Dörrenbächer & Perels, 2016; Fung et al., 2019; Guvenc, 2010; Jado, 2015; Schmitz & Wiese, 2006; Terry & Doolittle, 2008). Of interest to State University, journaling interventions have specifically achieved improvements in time management for students (Arsal, 2010; Schmitz and Wiese, 2006; Terry & Doolittle, 2008). Schmitz and Wiese (2006) examined the use of daily diaries to monitor everyday learning. The study included 40 German undergraduate engineering students with 19 students part of the control group. The intervention group participated in four two-hour training sessions on topics such as goal setting, time management, planning, and behavioral self-motivation. In

addition, the intervention group participants submitted a daily diary that included Likert-type questions related to self-efficacy and SRL as well as open-ended questions such as, "Which of your strategies have helped you to reach today's learning goal?" (p. 81). From the time series design, the researchers learned that students did not study every day, for varied reasons, such as leisure activities or low motivation. Participants in the intervention condition demonstrated reduced procrastination and improved self-efficacy compared to the control. In terms of training effects, the interrupted time series analyses showed no effect for goal setting and behavioral self-motivation, but there were significant effects for time management, planning, and procrastination.

Journaling and writing diaries have helped college students to improve SRL in contexts as diverse as Germany (Dörrenbächer & Perels, 2016; Schmitz & Wiese, 2006), Jordan (Jado, 2015), Malaysia (Fung et al., 2019), Turkey (Arsal, 2010), and the United States (Terry & Doolittle, 2008). In some cases, researchers measured academic performance, finding that treatment groups outperformed the control groups (Almer, 1998; Arsal, 2010). The majority of studies used daily journaling (Arsal, 2010; Dörrenbächer & Perels, 2016; Schmitz & Wiese, 2006; Terry & Doolittle, 2008), but Fung and colleagues (2019) showed that a weekly eLearning journal format was able to improve the SRL of 54 second-year undergraduate business students in Malaysia. The study employed a quasi-experimental design with time series analysis. The eLearning journal was administered using the Learning Management System (LMS) survey tool and prompts were designed to be relevant to students by reflecting the course curriculum from Week 2 through Week 10. The researchers used a paired sample t-test comparing participants' ratings on preintervention and postintervention administered Motivated Strategies Learning Questionnaire (MSLQ). There was a statistically

significant improvement between the preintervention and postintervention mean scores, both overall and on all subscales except for Organization.

In addition to the frequency of journaling, another consideration is whether to accompany journaling with training for students, and how much training is appropriate. Treatment groups in interventions that include journaling without training have self-reported improvements in SRL (Arsal, 2010; Fung et al., 2019; Jado, 2015; Terry & Doolittle, 2008). For example, Terry & Doolittle (2008) engaged 64 undergraduate and graduate students to report their time management behaviors for the previous day and their goals for the next day across 16 days using a web-based tool. The study used a 2 (rich versus lean feedback) x 2 (daily versus weekly feedback) x 2 (pre-post) repeated measures with random assignment design. Feedback was either "lean" in the form of automated messages on screen to highlight the extent to which they met their time management goal of the previous day, as well as provide encouragement, or "rich" in that it also included a tip on how to better manage their time. Feedback was either provided daily or only twice during the 16-day intervention. The pre and post tests administered the Generally Perceived Self-Efficacy scale, the Self-Efficacy for Self-Regulated Learning scale, and the Time Management Behaviors scale. ANOVA results reported increased time management behaviors, but no statistically significant improvements in self-efficacy or self-regulated learning. There were no effects due to the frequency or richness of feedback. The question is whether training for students in support of the journaling activity would have led to improvements in self-efficacy and SRL.

Pairing a journaling intervention with training achieved a more robust result than journaling alone in a study by Dörrenbächer and Perels (2016). The authors compared an eight-session training with an SRL monitoring journal and the combination of both

interventions. One-hundred and seventy-three German undergraduate students participated across four conditions, including a control. The study employed a quasi-experimental 2x2x2 factorial control-group design. Propensity score matching corrected for pretest differences between groups on the SRL subscales. The condition that included journaling plus training yielded a statistically significant increase in self-reported SRL, but daily journaling on its own did not. The authors hypothesized that this was potentially because without training the students did not perceive the value of the journal or become sufficiently invested in the process. In addition, the journal may have boosted and reinforced the impact of training (Dörrenbächer & Perels, 2016). Arsal (2010) came to a similar conclusion for why a daily journal by 60 preservice science teachers in Turkey achieved mixed results on MSLQ scales postintervention. Although the experimental group achieved higher scores on scales for intrinsic motivation, task value, metacognition, and time management, there was no significant difference on many of the scales. Arsal (2010) acknowledged that no training or guidance was provided related to cognitive strategies, such as those related to organization and elaboration, which may have explained why no difference was found between the groups on certain scales.

Combining journaling with training might achieve greater success in students' engagement with SRL (Dörrenbächer & Perels, 2016) and training might offer students the opportunity to understand the value of SRL. Berthold and colleagues (2007) tested a learning protocol similar to a journal, including specific prompts to facilitate cognition, metacognition, or a combination of both. Participants in the treatment conditions did not perceive the learning protocol as more useful, even though the cognitive and mixed conditions out-performed the control. Moreover, participants in the treatment conditions were not more successful in

predicting how they would perform on tests of understanding. Since the students in the treatment conditions failed to perceive the helpfulness of the prompts, the authors posited the value of "informed prompting" (p. 574), which involves providing participants detail about the learning strategies' effectiveness. The authors argued that informed prompting could encourage students to transfer the use of the cognitive and metacognitive strategies to other contexts.

An intervention that combines initial training for students with ongoing journaling has the potential to address State University's first-year students' challenges with time management (Arsal, 2010; Schmitz and Wiese, 2006; Terry & Doolittle, 2008). If training and journaling are administered via the online learning management system, the intervention will distribute SRL work across the semester, use up less classroom time, but still remain embedded in the curriculum. Prompts for the journals can reflect the phases of the SRL cycle by including questions that are pertinent to the different stages of assignments and test preparation. By addressing all three phases of the SRL cycle, a journal can help the student to consider the connections between the different parts, such as goals, strategies used, and outcomes achieved (Schmitz & Wiese, 2006). The journals themselves, in addition to helping students to self-monitor, will provide faculty with valuable insight into students' use of strategies, which can support faculty's efforts to help students become self-regulated learners. Faculty can also complement the data gleaned from the journals by practicing microanalysis with a sample of students. The microanalytic approach involves interviewing students about their situation-specific behaviors with regards to self-regulation (Artino et al., 2014; Cleary & Zimmerman, 2004; Cleary et al., 2017). The following section will elaborate on the faculty

role in this process, as well as consider how an intervention could prepare faculty to embed SRL training into their courses.

The Faculty Role

Students do not necessarily develop self-regulation skills and behaviors without support (Barnard-Brak et al., 2010). As described above, students self-regulate along a spectrum of four levels, including observation, emulation, self-control, and self-regulation (Pape et al., 2013). Before students attain a level of independent self-regulation, they need to observe and then imitate models as they progress towards a higher degree of self-control with less need for guidance. Faculty can support this process of development (Beishuizen, 2008; Paris & Paris, 2001). In sociocultural theory, the concept of a cognitive apprenticeship involves an expert helping the learner to progress in learning by providing guidance through models and scaffolding, and by helping the learner to reflect on problem-solving strategies (Rodriguez, 1998). Vygtosky (1978) defined the zone of proximal development as the learning range where a learner is able to solve problems with assistance. Faculty and students participate in a cognitive apprenticeship to assist students to navigate and develop in their zones of proximal development.

In the absence of faculty guidance, some students in the zone of proximal development might have difficulty independently developing SRL skills and behaviors. Barnard-Brak and colleagues (2010) observed first-year college students in the southwestern United States who were taking their first online courses. The Online Self-Regulated Learning Questionnaire (OSLQ) was administered in the first four weeks and in the last four weeks of the semester to assess whether participation in the online learning environment would lead to the development of SRL skills. The researchers hypothesized that the learning environment and student behavior in that space would naturally lead to higher scores on the OSLQ. However, paired sample t-tests

did not identify significant differences overall or for specific subscales. In the absence of cognitive apprenticeship, the learning environment on its own might not be sufficient to boost SRL behaviors.

An instructor needs to judge students' capacities for self-regulation, which can differ from one topic or context to the next. As Pape and colleagues (2013) described, although "a student may be competent in analyzing task requirements, he or she may be at the observation level with regard to task engagement" (p. 53). It is therefore important for faculty to learn about SRL so that they can model and scaffold students' skills and behaviors (Bembenutty, 2011). Faculty can scaffold students' thinking through dialogue that includes questions, uptake of students' comments, and making student thinking explicit as part of classroom conversation (Bell & Pape, 2012; Pape et al., 2003). Therefore, by eliciting the student voice, the instructor can diagnose students' level of understanding, provide calibrated support, and then fade out support as students progress towards higher levels of self-regulation (Azevedo & Hadwin, 2005).

Preparing Faculty to Facilitate SRL

Faculty are more likely to promote SRL with their students if they feel confident (Cleary et al., 2022; Dignath-van Ewijk, 2016; Tschannen-Moran & McMaster, 2009). Personal teaching efficacy relates to faculty believing that they are competent to teach their students (Johnbull et al., 2013). Dignath-van Ewijk (2016) found that the most influential direct effect on teachers' promotion of SRL was their self-efficacy, followed by believing that intelligence is malleable. Cleary and colleagues (2022) found that teachers who were most successful in developing skills and positive perceptions about supporting student SRL were more likely to put their professional development into practice. Personal self-efficacy is both an important precursor to faculty

support of student SRL and a useful measure to suggest faculty's level of knowledge and skills related to self-regulation.

Even when teachers receive substantial training and follow-up, they may not develop sufficient self-efficacy to independently support SRL. A professional development to help high school science teachers incorporate SRL into lesson plans sought to improve teachers' knowledge, self-efficacy, and application (Cleary et al., 2022). Nineteen teachers in the Mid-Atlantic region of the United States received one week of intensive training on SRL concepts and processes. The training included opportunities for individual and group activities, including on lesson plan design. Participants met with researchers monthly following the training to reinforce and supplement what they learned. Paired sample t-tests assessed participants' pre and post familiarity with SRL, knowledge of SRL, self-efficacy to support students in SRL, and their application of SRL through responses to vignettes. Based on post test scores, participants were divided into extreme case samples, including the highest scoring 25% "advanced SRL group" and the lowest scoring 25% "emerging SRL group" (p. 4). Interviews were conducted five to six months after the training with a subset of each group to compare the posttraining experiences of emerging and advanced groups. The paired samples t-test resulted in significant increases across measures, including for knowledge, self-efficacy, and ability to identify specific strategies to address situations in vignettes. Of note, the self-efficacy measure asked participants to differentially rate their confidence to support students who the participants perceived as at risk or as high achieving. Significant increases were even reported for supporting at risk students. Despite these large gains, in interviews five months later, teachers in the emerging SRL group were more pessimistic about implementing SRL. This group described external barriers, such as time constraints, and they doubted how possible it could be to support SRL in the classroom. In

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contrast, the advanced SRL group were excited to implement SRL in the classroom and reported efforts to do so. The authors noted that, consistent with previous research, teachers who are more successful in developing skills and positive perceptions are more likely to put professional development into practice.

The relationship between knowledge and skill related to a task is not always linearly related to higher self-efficacy. A mixed methods study by Spruce and Bol (2015) investigated the alignment of three factors related to teacher facilitation of SRL, including believing it is their role, having the appropriate knowledge and skills to instruct and scaffold SRL skills, and employing practices in the classroom. The authors collected data from elementary and middle school teachers through questionnaires, classroom observations, and interviews. There was often a discrepancy between teachers' positive attitudes about SRL and either their knowledge or classroom practice.

For faculty to embed SRL in each phase of learning, faculty need to learn the SRL process (Bembenutty, 2011). Dabbagh and Kitsantas (2009) examined the extent that twelve experienced online instructors at a Mid-Atlantic university employed integrative learning technologies (ILT) to support SRL processes, such as goal setting, planning, and monitoring. ILT was broadly defined as technologies supporting online and blended learning, ranging from content creation to assessment, and encompassing tools both within the learning management system as well as social media platforms and functions. Results of the questionnaire were analyzed using a conceptually clustered matrix. Instructors used ILT to support specific SRL processes, such as employing checklists (25%) to facilitate planning and providing dates for assignments in the LMS-based syllabus and calendar (84%). However, certain processes were not commonly supported; 61% reported that self-evaluation was not

supported by the instructors through ILT. Moreover, none of the participants reported deliberate use of ILT as a way to support SRL. This is consistent with evidence from the needs assessment study described in Chapter 2, which indicated that not all instructors think of SRL as a process that includes reciprocal interaction between students' motivation, metacognition, and use of strategic behaviors. Faculty addressed components of SRL, but did not explicitly teach SRL as a system or process that includes multiple phases.

Training Faculty

Faculty can learn the SRL cycle and its components (Allshouse, 2016; Cleary et al., 2022). The characteristics of effective educator professional development overlap significantly in literature reviews by Darling-Hammond and colleagues (2017) and Desimone (2009). Both highlighted the empirical support for professional development that focuses on content relevant to teaching practice, uses active learning strategies, involves a sustained opportunity to absorb content and change practice, and includes collaboration. Angelo (2001) argued that faculty development occurs in a socially constructed context. As such, it is important to foster a collegial learning environment, develop shared goals, and construct vocabulary and mental models to facilitate discourse related to the content.

Coaching and expert support is an important characteristic of effective professional development (Darling-Hammond, 2017). Support was the most important factor in helping STEM faculty to adopt evidence-based teaching (EBT) according to Bathgate and colleagues (2019). The authors explored factors influencing college STEM faculty's use of evidence-based teaching (EBT), characterized in the study as including active learning, formative assessment, and inclusion. The 584 participants were STEM faculty from across the United States who had previously participated in the Summer Institute on Scientific Teaching between 2004-2014. The

week-long professional development focused on EBT. Bathgate and colleagues examined factors such as growth mindset, confidence, teaching value, teaching anxiety, perception of supports and barriers, as well as implementation of EBT. Items for each of the measures were adapted from existing instruments. For example, the three growth mindset items were derived from a scale by Dweck and colleagues (1995). For implementation of EBT, 19 binary items were based on the practices taught at the Summer Institute, such as, fostering group discussion. Multiple linear regressions determined that perceived support was the factor that most strongly related to implementation of EBT, even when controlling for motivation, confidence, and background characteristics such as gender, minority status, and teaching experience. The authors indicated that helping faculty to identify and use supports can help instructors struggling with low confidence to nevertheless adopt evidence-based teaching.

Another training model that has successfully increased the use of EBT and also been associated with student achievement is the GRASP program (McShannon & Hynes, 2005; Perez et al., 2012). McShannon and Hynes (2005) evaluated the GRASP faculty development program at New Mexico State University. Between 1999 and 2004, 62 engineering and science faculty participated in a semester long workshop and received feedback from classroom observations. 89% of the participating faculty reported using one of the strategies learned at least once per week. On average, students increased their grades by 5%, and there was a 6% increase in retention in the science program one year later.

A short training can also result in improved knowledge of SRL by teachers (Allshouse, 2016). A three-hour teacher training workshop was delivered to nine teachers at the middle and high school levels. The workshop focused on the SRL cycle and self-regulation strategies students can use to self-motivate, plan, monitor their progress, and react to outcomes. Pre and

post measures were used to assess participants' SRL knowledge, application of SRL, and self-efficacy for supporting SRL. To measure SRL knowledge, participants were asked to provide a detailed definition of SRL and its components. To assess application of SRL, participants reviewed a vignette and responded with a list of ways to support the hypothetical student. Responses to these were coded and compared pre and post training. Teacher efficacy for promoting SRL was measured by an adapted version of the Teacher Sense of Efficacy Scale. Paired samples t-tests resulted in significant gains for SRL knowledge and application, but not for self-efficacy. Allshouse (2016) noted that insufficient power for the small sample size may have masked the effect on self-efficacy.

Faculty have an important role in supporting students to become increasingly self-regulated. Training (Allshouse, 2016; Cleary et al., 2022) and ongoing support (Bathgate et al., 2019) can prepare faculty to guide students in a cognitive apprenticeship. Just as students benefit from learning SRL in an embedded way (Hattie et al., 1998), faculty training should be embedded in their teaching practice (Camburn & Seong, 2017; Darling-Hammond et al., 2017) and engage faculty in active learning (Darling-Hammond et al., 2017). The following intervention design will therefore ask faculty to connect the SRL cycle to their teaching practice. Following the initial training, support will be sustained throughout the semester in order to build their confidence (Tschannen-Moran & McMaster, 2009) and reinforce the chances that faculty make SRL coaching a part of their teaching toolkit.

Intervention Design

To support the distal goal of first-year student persistence in college, an intervention will be designed to support first-year students with self-regulated learning in the first semester College 101 course. Recognizing that faculty are ideally situated to support SRL (Paris & Paris,

2001), the intervention will target both faculty and students in training and ongoing support.

Based on previous intervention studies (Allshouse, 2016; Cleary et al., 2022), faculty will be asked to participate in an initial 4.5 hours of training over Zoom to learn the SRL cycle and its components and the use of student journaling as a form of metacognitive monitoring to support SRL (cf. Fung et al., 2019; Schmitz & Wiese, 2006). Students will be asked to complete a learning strategies module that includes the value of a growth mindset (Fink et al., 2018), the importance of goal setting and planning (Häfner et al., 2014), and time management (Häfner et al., 2014; Fung et al., 2019) to assist with the forethought phase of SRL. Students will be introduced to learning strategies such as distributed practice and retrieval practice (Kornell, 2009), as well as the value of self-monitoring to support the performance phase (Nietfeld et al., 2006). Finally, students will be invited to make attributions that identify outcomes as controllable (Dryden et al., 2021; Hamm et al., 2017) in the reflection phase.

Following training, faculty will be asked to update their assignment prompts to scaffold SRL and assign weekly SRL journal prompts (Fung et al., 2019). As students submit journal entries, I will meet with faculty during the semester to review and interpret the entries. It is an opportunity to extend and reinforce the initial faculty training across the semester. A characteristic of effective professional development includes a sufficient duration (Desimone, 2009). During these check-ins, we will discuss the types of feedback that could benefit students by re-visiting the components of the SRL cycle. Finally, to support students' mindset throughout the course, faculty will incorporate wise feedback (Yeager et al., 2014).

For the journaling to succeed, it is important for students to perceive the value in the activity (Berthold et al., 2007; Dörrenbächer & Perels, 2016). Journals assigned without any training have had limited impact (Arsal, 2010; Dörrenbächer & Perels, 2016). Students do not

consistently self-monitor on their own (Lan, 2005), therefore faculty encouragement could help students to persist in self-monitoring across the semester.

The combination of student training (Dörrenbächer & Perels, 2016), SRL journaling (Fung et al., 2019), and wise feedback (Yeager et al., 2014) is expected to produce the short-term outcome of students increasing their use of different types of strategies, which could include time management, planning, and help seeking, among others. In addition, students are expected to self-report higher task value, a malleable mindset (Yeager et al., 2014), and attribution of outcomes to internal and controllable sources (Hamm et al., 2017). An intermediate outcome would be students achieving higher grades (Ning & Downing, 2010; Slanger et al., 2015; Tuckman, 2005) and faculty increasing their self-efficacy to coach SRL (Allshouse, 2016; Cleary et al., 2022). A distal outcome would be that an increased percentage of students persist from the first into the second year of college (Ishitani & Reid, 2015). The success of the intervention relies on assumptions and external factors. Faculty need to see the value of coaching SRL and manage competing demands on their time. In addition, overconfidence can reduce students' motivation to learn new strategies (Serra & DeMarree, 2016). An assumption is that students will engage with the learning modules, submit their assignments, and review feedback. The following chapter will describe the intervention in more detail and an evaluation plan to explore its efficacy.

Chapter 4

Intervention Procedure and Program Evaluation Methodology

Nearly a third of State University's first-year students who started college in fall 2019 did not persist into their second year (Office of Institutional Research, n.d.). SRL is a factor related to college student achievement (Slanger et al., 2015; Ning & Downing, 2010; Tuckman, 2005), which relates to college persistence (Ishitani & Reid, 2015). In the 2021 needs assessment study described in Chapter 2, first-year students at State University reported using empirically-supported learning strategies inconsistently. Strategies such as distributed practice, self-testing, and elaboration are well supported by research (cf. Dunlosky et al., 2013), but only 20% of State University students reported self-testing, and none indicated that they space out their work. Concurrently, faculty viewed time management as a major challenge for first-year students. Although faculty responses included examples of strategies taught to students, few of the faculty described scaffolding students' time management skills, and none characterized SRL as a process that occurs in phases as described by social cognitive researchers (e.g., Schunk, 2001; Zimmerman, 1989, 2002). Through a combination of training and guided monitoring, this intervention aimed to support faculty with scaffolding student SRL, and prepare students to engage more deeply in SRL behaviors.

Purpose of Study

The purpose of this study was to examine the efficacy of a weekly SRL journal on students' reported SRL strategies as measured by a codebook encompassing fourteen categories of SRL (Zimmerman & Martinez-Pons, 1986). In addition, the Growth Mindset Scale (Dweck et al., 1995) was used to examine students' reported growth mindsets. Finally, the study assessed faculty's self-efficacy to support student SRL through the Teacher Self-Efficacy Scale for

Promoting SRL (Allshouse, 2016) and open-ended questions in the faculty postintervention survey and interviews.

The study included process and outcome evaluation questions. The following questions were aligned with the specific constructs, data collection instruments, and data analysis approaches in the Research Matrix (Appendix E).

Process Research Questions

PRQ 1: What were faculty and students' experience related to SRL training and support?

PRQ 2: To what extent did instructors implement revised assignment prompts, weekly journals, and wise feedback?

Outcome Research Questions

ORQ 1: In what ways did first-year college students report a change in growth mindset and use of SRL strategies at the end of the intervention?

ORQ 2: To what extent did faculty feel prepared to support student self-regulation following the intervention?

Research Design

The study employed an evaluation design, which Cresswell and Plano Clark (2018) described as appropriate for evaluating the process and outcomes of an intervention. The evaluation design is associated with multiple phases of research and the use of multiple designs to investigate a set of inter-connected research questions (Cresswell & Plano Clark, 2018). Two literature review phases and a needs assessment study preceded the intervention study. The study also included multiple designs within a convergent mixed methods design (cf. Cresswell & Plano Clark, 2018), including a time series design to examine SRL strategies and a one-group pretest-

posttest design (Shadish et al., 2002) to assess changes in students' growth mindset and faculty self-efficacy to support SRL.

A mixed methods design involves combining quantitative and qualitative approaches to get a more holistic understanding of the intervention (Johnson et al., 2007) and its possible impact on participants (Smith & Gadbury-Amyot, 2014). The convergent design is also applicable due to the limited time for data collection and analysis. The pragmatic paradigm of program evaluation (Mertens, 2018) prioritizes the use dimension (Christie et al., 2017; Mertens, 2018). This study aligned with the pragmatic paradigm because the primary goal was to support course improvement by strengthening existing efforts in College 101 courses to develop students' academic skills and behaviors.

To support students' use of SRL behaviors, the Theory of Treatment (depicted in Figure 4.1) outlines the process of change in the intervention as a basic two-step model (Leviton & Lipsey, 2007). According to Leviton and Lipsey (2007), the process to address a defined problem includes describing the critical inputs, the key mechanisms of the transformation process, and the expected outputs. The critical inputs included training for both faculty and students participating in the College 101 program. Faculty training involved three training sessions to provide an overview of the phases of the SRL cycle and how assignment prompts and weekly journaling can engage students in forethought, performance control, and reflection about their use of learning strategies. Faculty training has improved faculty self-efficacy to promote SRL (Cleary et al., 2022; Dignath-van Ewijk, 2016) and faculty are more likely to promote SRL with their students if they feel confident (Cleary et al., 2022; Dignath-van Ewijk, 2016; Tschannen-Moran & McMaster, 2009).

Figure 4.1

Theory of Treatment

Faculty Training on: (a) the SRL cycle and its components, (b) learning strategies, (c) the use of student journaling to support SRL, and (d) how assignment prompts can support SRL. Three weekly training sessions (3 hours total) 1-2 check-ins to review and interpret student SRL journals and identify appropriate feedback for students. Faculty will complete a pre-post survey to measure self-efficacy and a post-training feedback survey for process evaluation.	**Faculty** • Update assignment prompts to scaffold SRL • Use weekly journal prompts to facilitate student engagement in SRL • Use of wise feedback to promote a growth mindset *Measures: assignment and journal prompts in LMS*	**Faculty** • Increased self-efficacy to coach SRL • Intention to incorporate SRL cycle into future assignments *Measure: Pre-post survey*
Student Training on (a) the SRL cycle and its components and (b) learning strategies. The training will be provided asynchronously via an online learning module (~1-2s hour total).	**Students** • Describe use of strategies in weekly journal; • rate mindset in pre-post survey *Measures: Weekly journal, pre-post survey*	**Students** • Increased use of different types of strategies • Higher ratings of mindset *Measures: Weekly journal; pre-post survey*

Students
• Higher GPA
• Increased persistence/retention

The faculty training was expected to lead to the key mechanisms of the transformation process. The first key mechanism was updated assignment prompts that scaffold student SRL. Improved assignment prompts could highlight strategies that can help students to accomplish assigned tasks or that include guidance to support time management. Dabbagh and Kitsantas (2005) highlighted the value of scaffolding SRL in assignments. Secondly, faculty would assign weekly journal prompts designed to facilitate students' metacognitive monitoring and strategy use as described by Fung and colleagues (2019). Thirdly, I supported faculty with devising feedback that incorporates guidance to support students' adoption of a growth mindset and SRL behaviors. Growth mindset-oriented feedback helped African American students to incorporate more of their instructor's feedback, increase trust of faculty, and achieve higher grades (Yeager

et al., 2014). The key mechanism for students was their self-monitoring of time management practices and strategy use in weekly journals. The Theory of Treatment recognized that improved SRL is more likely when ongoing scaffolding occurs, since some students are likely to learn SRL more quickly than others (Becker, 2013; Fung et al., 2019).

An expected intermediate outcome for faculty was increased self-efficacy and willingness to scaffold SRL (Cleary et al., 2022). Students were expected to increase their use of different types of strategies. Using varied strategies related to higher performance in middle school mathematics (Pape & Wang, 2003) and with overall high school performance (Zimmerman & Martinez-Pons, 1986). In addition, a meta-analysis of metacognition interventions found that teaching varied metacognitive strategies was associated with increased student comprehension (Haller et al., 1988). If students increased their use of time management strategies, this would address a major concern voiced by faculty at State University. Self-regulated students who manage their time are also more likely to perform better academically (Thibodeaux et al., 2017; Tuckman, 2005), a medium-term outcome sought by the intervention.

Another expected medium- to longer-term outcome was for students to increasingly identify with a malleable view of intelligence by having a growth mindset. Interventions to support growth-oriented mindsets and build student confidence in learning supported student performance, particularly academically struggling and minoritized students (Aronson et al., 2002; Farrington et al., 2012; Fink et al., 2018; McCabe et al., 2020; Yeager et al., 2014). The retention rates for racial minorities and first-generation students are lower than for White and continuing-generation students at State University (Office of Institutional Research, n.d.). Therefore, an intervention aiming to improve academic performance and student mindset could positively influence the persistence rate at the institution.

Process Evaluation

According to Stufflebeam (2003), a process evaluation supports documentation of the program's implementation and provides an ongoing check on its activities. A process evaluation also supports a nuanced consideration of participants' experience (Smith & Gadbury-Amyot, 2014). It serves the dual purpose of giving the evaluator feedback on the extent that the plan has been implemented as well as data to inform improvement. Johnson and colleagues (2007) indicated that using mixed methods facilitates a more detailed understanding of a program's implementation. This study's process evaluation used mixed methods to collect and analyze both quantitative and qualitative data. Qualitative data in particular facilitated the examination of participants' perceptions about the activities, such as whether faculty and students valued the process of SRL journaling. This process evaluation plan was guided by two components, participant responsiveness and initial use.

Participant responsiveness is a fidelity of implementation component that measures the extent to which the study participants are engaged by the activities and content of the intervention (Dusenbury et al., 2003). Faculty participant responsiveness was operationalized through their participation in three SRL training sessions and in reviews of students' weekly journaling. High fidelity for training included faculty agreeing or strongly agreeing that they were satisfied with the training and felt prepared to provide SRL guidance. Students' participant responsiveness was operationalized through their perceptions about their experience learning SRL and participating in the weekly journaling.

Initial use is a component that measures the extent to which participants conducted the activities specified (Baranowski & Stables, 2000). This study measured initial use as faculty implementation of activities to scaffold student SRL, including updated assignment prompts,

assignment of four weekly SRL journal prompts, and wise feedback (cf. Yeager et al., 2014).

The activities to scaffold student SRL are outlined in the Logic Model (see Appendix Q) and are

key mechanisms identified in the Theory of Treatment (Figure 4.1). High fidelity included SRL

guidance in all assignment prompts, the assignment of at least three weekly journal prompts, and

faculty rating that they often or always provided wise feedback. Low fidelity included SRL

guidance in 0-1 assignment prompts, assignment of fewer than three journal prompts, and rare or

no wise feedback.

Outcome Evaluation

I examined students' articulation of SRL strategies in a time series design. A time series

design involves collecting data at many points in time, which facilitates the observation of

within-person variation (Fung et al., 2019; Schmitz and Wiese, 2006). In addition, this approach

supports ecological validity because data are collected during the learning process, whether in

the classroom or at home while studying (Schmitz & Wiese, 2006). To mitigate the risk of

alternative explanations for students reporting an increased number and variety of SRL

strategies, the design included two categories of SRL to act as nonequivalent dependent variables

for coherent pattern matching (Shadish et al., 2002). A nonequivalent dependent variable is

related to the construct of concern but not predicted to change as a result of the treatment.

Importantly, a nonequivalent dependent variable is expected to respond to potential threats to

internal validity, such as history or maturation. If data collection captures the presence of

nonequivalent dependent variables, it increases the probability for alternative explanations of the

results observed. The nonequivalent variables were *self-consequences*, which are statements

related to self-rewards for doing schoolwork, and *seeking social assistance from adults* (other

than faculty). If students provided examples of self-consequences, for example, it could indicate

that students were receiving SRL guidance outside the intervention, or were independently developing SRL strategies through maturation. I selected these variables because they are part of the SRL categories used for data analysis (Zimmerman & Martinez-Pons, 1986) but were not included in the student learning strategies module or faculty training.

I assessed students' growth mindset in a one-group pretest-posttest design (Shadish et al., 2002), which involved collecting data preintervention and postintervention. This outcome was measured using the Growth Mindset Scale (see Appendix N) (Dweck et al., 1995; Wang et al., 2021). This design was appropriate given the limitations due to the time available for data collection. Shadish and colleagues (2002) indicated that a one-group pretest-posttest design offers limited potential for inferences due to the risk that alternative causes are responsible for any observed change. The process evaluation aimed to provide additional evidence for connecting the students' growth mindset ratings to the intervention by recording the frequency that faculty provided wise feedback to students.

Faculty self-efficacy was measured in a one-group pretest-posttest design (Shadish et al., 2002) using the Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016), which was administered prior to and following faculty training (see Appendix O). In addition, I triangulated open-ended questions in the faculty postintervention survey and interviews with the quantitative data according to the mixed methods design (Onwuegbuzie & Leech, 2006). The use of qualitative data to help answer the research question recognized the limits of a global measure for self-efficacy, given that self-efficacy is highly context-dependent (Tschannen-Moran & Hoy, 2001).

Method

This section describes the participants, measures, and procedures for participant recruitment, data collection, and data analysis. I aligned the measures, constructs, and data analysis with the research questions in the Research Matrix (see Appendix E).

Participants

I sampled two populations at State University, including faculty instructing College 101 courses in fall 2022 and students participating in the College 101 courses taught by recruited faculty. This was partly purposeful sampling because it specifically targeted the College 101 program for first-year students, however these were also convenience samples because participants were accepted based on their availability and willingness to participate. In addition to being enrolled in a College 101 section taught by a participating faculty member, student participants were required to be 18 years of age or older.

Faculty

Four of the 16 faculty (25%) teaching sections of College 101 participated in the study. The faculty participant characteristics are summarized in Table 4.1. The breakdown of participants included three (75%) female faculty and one (25%) male faculty member. All four academic colleges were represented by the four participants. The participants also represented a large range of college teaching experience, with the number of years ranging from 4-10 years to 25+ years.

Table 4.1

Faculty Participant Demographic Characteristics

Instructor Pseudonym	Academic College	Years of College	Gender

		Teaching Experience	
Shawn	Education & Social and Behavioral Sciences	25+ years	Male
Melanie	Arts & Humanities	11-15 years	Female
Jenn	Business	4-10 years	Female
Karen	Science, Technology, Engineering and Mathematics	16-24 years	Female

Students

Three students (4%) participated in the study. The students were enrolled in three of the five sections of College 101 taught by the four participating faculty. Table 4.2 presents the students' demographic characteristics. Participants included two female (66%) students between 18-19 years of age and one male (33%) student between 20-23 years of age. One female student self-identified as Brazilian, the second female student identified as biracial, and the male student identified as White. Two of the three students shared whether either of their parents attained a college degree; the male student indicated that neither of his parents had a college degree and the biracial female student indicated that one of her parents had a college degree. Only the male student indicated that he was eligible for a Federal Pell Grant.

Table 4.2

Demographics of Student Participants

Student Pseudonym	Gender	Age Range	Race	Parent(s) with college degree?	Federal Pell Grant eligibility
Bruna	Woman	18-19	Other-Brazilian		
Carmen	Woman	18-19	Other-Biracial	Yes	
Jason	Man	20-23	White	No	Yes

Measures

I used a variety of instruments to answer the process and outcome research questions. Faculty and students completed surveys. A separate student researcher interviewed all four

faculty participants. Students completed assignments in the LMS and one of the three students participated in a postintervention focus group interview.

Faculty Preintervention Survey

The faculty preintervention survey included demographic data questions related to gender, academic college, and years of college teaching experience (Appendix F). The initial survey of faculty also served as a pretest of faculty's application of SRL knowledge and self-efficacy to support student self-regulation.

Open-ended Questions. Based on previous studies (Allshouse, 2016; Cleary et al., 2022), I measured the application of SRL knowledge through a vignette (Appendix G) about an example student with the question, "Create a list describing specific things you could do in your classroom to help improve the student's self-regulated learning."

Teacher Self-Efficacy Scale for Promoting SRL. The 10-item Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016) employed a five-point Likert-scale, where responses ranged from (1) "cannot do at all" to (5) "highly confident I can do" on items such as, "help students use feedback to improve their performance" and "help students identify the learning strategies that work best for them" (see Appendix O). Allshouse (2016) determined acceptable reliability for the instrument at pretest ($\alpha = .94$) and posttest ($\alpha = .85$).

Faculty Posttraining Survey

Faculty satisfaction with the training indicated their sense of preparedness to support students in these activities. At the end of the three training sessions, faculty responded to survey questions to assess their reactions (see Appendix H). The first two items included rating the extent to which they felt satisfied with the training and their confidence. The five-point scale for these two questions used anchor points of (1) Strongly Disagree and (5) Strongly Agree. Faculty

rated their reactions to the following statements: "I am satisfied with the three training sessions" and "I feel prepared to provide SRL guidance to my students." In addition, to assess application of SRL, I shared a vignette with faculty and asked them to list specific ways to help the example student with SRL. Given that administering the same vignette twice in a short period of time could introduce a threat to internal validity related to familiarity with the instrument (Shadish et al., 2002), a different vignette was used for this posttraining survey of faculty application of SRL.

Faculty Postintervention Survey

To measure changes in faculty self-efficacy to support student self-regulation, I administered, for the second time, the Teacher Self-Efficacy Scale for Promoting SRL, described under Faculty Preintervention Survey (Appendix O). The survey included open-ended questions related to both the process and outcome evaluations (Appendix I). For example, faculty were asked, "Did the efforts that you and students dedicated to the weekly journals take up time that could have been more usefully spent on other tasks?" If participants were enthusiastic about SRL journaling at the end of the intervention, it would provide evidence to support "ruling in" (Leviton & Lipsey, 2007, p. 51) the journaling as a possible cause of the outcome. According to Smith and Gadbury-Amyot (2014), when participants' active involvement in activities is an important assumption in the theory of change, it is critical to examine their perceptions. In addition, the above question served as a balancing measure, which aimed to reveal unintended or unexpected consequences of the intervention (Bryk et al., 2015; Christie et al., 2017). As a qualitative measure of faculty self-efficacy to support SRL, faculty were asked, "To what extent do you feel prepared to support your students to self-regulate their learning? Please explain why you feel the way that you do."

Faculty Postintervention Interviews

Interviews with faculty facilitated asking open-ended questions to explore their experience and perceptions (Cresswell & Plano Clark, 2018). The interviews complemented the postintervention surveys by asking faculty to describe their perceptions of the training and support they received, their experience with using the journaling to support SRL, and their intentions for supporting SRL in the future (see Appendix J). In addition, to better understand how faculty implemented the initial training (Baranowski & Stables, 2000), the interviewer asked faculty to describe how they incorporated SRL support into assignments and feedback. Example questions included: "How useful was the weekly SRL journaling towards helping you identify the students who needed support?" and "How confident do you now feel that you can support your students to develop their skills with self-regulating their learning?" To improve the credibility of the interview protocol, the protocol was reviewed by and discussed with my dissertation advisor.

Student Preintervention Survey

The purpose of the preintervention survey was to collect demographic data about participating students and to administer the Growth Mindset Scale (Dweck et al., 1995).

Demographic Questions. The initial survey of students included demographic data questions that asked students to report their race, gender, socioeconomic status as indicated by Pell Grant eligibility, and first-generation status (see Appendix P).

Growth Mindset Scale. The Growth Mindset Scale included three items to which participants responded on a five-point scale with anchors of (1) Strongly Disagree and (5) Strongly Agree (see Appendix N). Students were asked to report their agreement with statements such as, "You have a certain amount of intelligence, and you really can't do much to change it."

Responses were reverse coded so that higher scores reflected a growth mindset. Dweck and colleagues (1995) reported high internal reliability across five validation studies, ranging from α = .94 to .98. Wang and colleagues (2021), who used the Growth Mindset Scale with college students, also reported high reliability (α = .92).

Student Postintervention Survey

At the conclusion of the intervention, I asked students to reflect on the experience of journaling and administered the Growth Mindset Scale a second time (see detailed description of instrument under Student Preintervention Survey). Capturing students' perspectives about SRL journaling supported the participant responsiveness (Dusenbury et al., 2003) component of the process evaluation because the data could show whether students perceived participation in the journaling exercise to be valuable and worthwhile. Students answered open-ended questions to reflect on their experience. A sample item was, "Describe whether the weekly journaling helped you to think about your learning strategies and/or plan and monitor your learning process."

Student Postintervention Focus Group

The purpose of the focus group interview (Appendix L) was to examine students' perceptions related to the intervention experience. Sample questions included: "What new strategies do you intend to carry forward and try again?" and "Describe your experience with the weekly journal. Did the journaling help you to think about learning strategies you could use?" To improve the credibility of the focus group protocol, the protocol was reviewed by and discussed with the dissertation advisor.

Observations of LMS course sites

I conducted observations of the LMS course sites to verify the extent to which SRL journals were assigned and SRL scaffolding was provided in assignment prompts. Observations

early in the intervention provided opportunities to identify and study variations in implementation and then act upon these (Bryk et al., 2015; Christie et al., 2017). In addition, I examined the LMS to verify whether students engaged with the learning strategies module and participated in the SRL journaling.

Student Weekly SRL Journal

The journal prompts included four open-ended questions based on prompts used by Artino and colleagues (2014) and Fung and colleagues (2019). The prompts elicited students' current challenges, activities, and strategies. Similar to the microanalytic approach, which uses a structured interview to record student observations of specific situations or tasks (Cleary & Zimmerman, 2004; Cleary et al., 2017), students provided situation-specific reflections in response to the SRL journal prompts. Students reflected on their learning successes during the past week and strategies used to achieve success. Students then outlined their current learning tasks and considered their learning challenges from the week and how these might be overcome. Finally, students considered the strategies that could help them perform well on the upcoming tasks. A sample prompt was, "What strategies do you think you need to use to perform well on the task/assignment?"

Procedure

The following sections outline the procedures used to recruit participants, conduct the intervention, collect data, and analyze the data.

Participant Recruitment

I sampled two populations, faculty and students. The emails sent to both faculty and students contained the respective informed consent forms.

Recruitment of Faculty. I recruited faculty who were teaching a fall 2022 course in the College 101 program for first-year students via an email inviting them to participate with a follow-up email one week later. I acquired the list of faculty teaching College 101 from the coordinators of the program.

Recruitment of Students. I recruited students enrolled in College 101 courses to participate in the study. These were first-year freshman students who were 18 years of age or older. With faculty permission, I presented the research study to students in class and then followed up with an email inviting students to participate. During recruitment, student participants were asked to confirm that they were 18 years of age or older if they wished to join the study. I sent a follow-up email to non-respondents one week later.

Intervention

According to McLaughlin and Jordan (2010), a logic model outlines the inputs, activities, desired outcomes, assumptions, and risks to success. The inputs in the Logic Model (Appendix Q) included stakeholders' time dedicated to the intervention. Stakeholders included participating faculty, the instructional designer, and participating students. In addition, I delivered the student module on learning strategies, standard course assignments, and an SRL journal using the Canvas LMS. The Zoom meeting tool facilitated faculty training.

Faculty Training. In the first activity, faculty training on SRL, the topics were based on an intervention by Allshouse (2016) and guidelines outlined by Cleary (2018). The rationale for student SRL journaling was connected to past research (cf. Fung et al., 2019; Schmitz & Wiese, 2006). Table 4.3 provides key questions and outputs from the three 90-minute sessions. A detailed outline of the three faculty training sessions is in Appendix T. During the training, I

asked faculty to update their assignment prompts to scaffold SRL and to assign weekly SRL

journal prompts.

Table 4.*3*

Outline of Faculty Training

Sessions (90 minutes)	Key Questions	Outputs
1. The SRL Feedback Loop	- What is SRL? - What are components of each phase in the cycle? - What are strategies for the forethought phase?	- Fill out a matrix with SRL components of forethought, performance, and reflection phases - Identify forethought strategies in student Learning Strategies module
2. Motivation and SRL	- What is self-efficacy and growth mindset? - What happens when students face setbacks? - Why is self-efficacy and a growth mindset important? - How do we make attributions about learning outcomes? - What are self-motivation strategies? - How can we create a learning environment that fosters motivation?	- Expand matrix of SRL components to include examples of strategies (e.g. noting one's learning process as an example of self-observation) - Adopt feedback phrases that can support a growth mindset (Yeager et al., 2014)
3. Feedback and Reflection	- What are process goals? - Why is it important to set process goals and provide feedback on process? - How can students monitor their behaviors and strategies? - How can student journaling promote self-reflection? - How can we provide feedback related to SRL journal entries?	- Update a major assignment with SRL scaffolds/guidance (e.g. related to process of completing the assignment) - Brainstorm feedback to provide to a student in a hypothetical vignette

Note. The three-session structure of the faculty training is based on Allshouse (2016), whose

training was three hours in duration. Content was derived by a review of Allshouse (2016) and

Cleary (2018). In addition, the training used active learning strategies, connected content to

teaching practice, and involved collaboration between participants, which are characteristics of effective professional development (cf. Angelo, 2001; Darling-Hammond et al., 2017; Desimone, 2009).

Student Training. Faculty assigned students a learning strategies module (see Appendix S). Students participated in coursework, including submitting regular assignments and the weekly SRL journal (see Appendix M). Student training started with exposure to the SRL cycle (Zimmerman, 2002) as a way to frame the presentation of learning strategies related to planning, metacognitive monitoring, and reflection. The training occurred asynchronously as a course module requiring 2-3 hours of reading, videos, infographics, and knowledge checks. McCabe (2011) provided learning strategies instruction during a single class session that resulted in improved recognition of empirically supported strategies, such as testing and generating one's own notes. Azevedo and Cromley (2004) employed a brief 30-minute training prior to a 45-minute investigation of the circulatory system, which led participants to display significantly more complex mental models and perform better on the post test. The learning strategies module could be referenced by instructors in subsequent assignment feedback. Student training was designed to prepare students to participate in self-monitoring through a weekly journal. According to Dörrenbächer and Perels (2016), SRL journaling paired with training was more effective than journaling alone.

Ongoing Faculty Support. During the course of the intervention, I was available to consult when faculty had questions. Depending on faculty availability, I offered to meet with them as needed during the rest of the semester to review and interpret the participating students' SRL journal entries, to reinforce the initial faculty training, and discuss the types of feedback

that could benefit students based on their journal entries. Finally, to support students' mindset, I asked faculty to incorporate wise feedback, as defined by Yeager and colleagues (2014).

I expected the combination of student training, SRL journaling, and wise feedback to produce the short-term outcome of students increasing their use of different types of strategies (Arsal, 2010; Berthold et al., 2007; Haller et al., 1988; Klein & Freitag, 1992; Schmitz & Wiese, 2006) and self-reporting a growth mindset (Yeager et al., 2014). An intermediate outcome would be students achieving higher grades. Previous research has connected increased reported SRL to higher grades (Becker, 2013; Ning & Downing, 2010; Slanger et al., 2015; Tuckman, 2005). Another intermediate outcome could include faculty increasing their self-efficacy to coach SRL, as reported by Cleary and colleagues (2022) and Dignath-van Ewijk (2016). A distal outcome would be an increased percentage of students persisting from the first into the second year of college (Ishitani & Reid, 2015). The success of the intervention relied on assumptions and external factors. Faculty needed to see the value of coaching SRL and to manage competing demands on their time. Overconfidence can reduce students' motivation to learn new strategies (Serra & DeMarree, 2016). Students needed to engage with the learning strategies module, submit their assignments, and review feedback.

Data Collection

Once the Johns Hopkins Homewood Institutional Review Board and State University's Institutional Review Board approved all instruments, quantitative and qualitative data were collected concurrently according to the mixed methods design. The following sections describe data collection procedures for quantitative and qualitative measures.

Surveys. I administered the faculty and student surveys using Qualtrics at the start and conclusion of the intervention, with an additional survey for faculty at the conclusion of the

initial three-session training. Faculty and students received survey links by email. I deleted survey results from Qualtrics once the surveys were closed and backed up.

Interviews and Focus Group. Faculty interviews took place at the conclusion of the intervention. A third party not involved in the research design or the intervention conducted the interviews and the focus group over Zoom, producing audio-only recordings and transcripts. Participants used pseudonyms in recordings so that the transcripts did not include identifying information. I saved audio recordings and transcripts to a password protected external hard drive. No recordings were maintained on the Zoom server.

Observations of LMS Course Sites. Each section of the College 101 courses participating in the study had a course site hosted in the Canvas LMS. Once students submitted 1-2 SRL journal entries, each course site was scanned to examine assignment prompts and weekly journal entries. The examination of SRL journal entries provided data about students' reported challenges and use of strategies to inform potential feedback faculty could provide. At the conclusion of the intervention, I conducted a final scan of the course sites to tally the number of weekly journals assigned to students and how many of the assignment prompts included scaffolding to support SRL. In addition, I exported the journal entries of participating students for the purpose of analyzing their reported use of strategies throughout the intervention. One of the participating courses employed physical written journals. The journal from a participating student in this class was acquired from the professor at the end of the course.

Data Analysis

Based on guidance by Cresswell and Plano Clark (2018) for convergent mixed methods designs, quantitative and qualititative data were first analyzed separately before mixing occurred.

Student and Faculty Surveys. I calculated descriptive statistics to examine patterns in the data (Lochmiller & Lester, 2017). This included calculating frequency distributions, measures of central tendency (i.e., mean, median, and mode), and measures of variability, such as the standard deviation. I used SPSS Version 27 to run the Descriptives function to summarize the numeric variables and compare these side-by-side. The open-ended questions in each survey were included in the qualitative analysis. I employed both a priori and emergent coding (Elliott, 2018). A priori codes were drawn from Zimmerman and Martinez-Pons (1986) (see Appendix R).

Faculty Interviews, Student Focus Group, and Survey Open-ended Questions. I reviewed and coded the qualitative data in two phases, including a total of five reads of the data. First-cycle coding employed elemental coding methods (Miles et al., 2014). I also fixed inaccuracies in the transcripts on the first read and began to take notes on unanticipated findings to facilitate the creation of emergent codes. The transcripts were then uploaded into Nvivo (Release 1.5.1) for additional reads. Subsequent reads applied a priori and emergent codes to the transcripts. Second-cycle coding employed thematic analysis. A theme, "represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 82). The fourth and fifth reads involved grouping codes into themes and writing analytic memos to capture emerging findings. To increase trustworthiness, I employed member checking (Guba, 1981; Shenton, 2004), such as by paraphrasing some of the interviewees' responses and by asking follow-up questions to clarify their answers. In addition, my dissertation advisor reviewed a portion of the coded data as an external check.

SRL Weekly Journal and Vignettes. Data analysis for the SRL journal followed the stages outlined by Onwuegbuzie and Leech (2006). Thematic analysis helped me to capture

emergent ideas in the students' responses (Elliott, 2018). I transformed the responses through quantification (Cresswell & Plano Clark, 2018). I coded the responses using fourteen categories of the Self-Regulated Learning Interview Schedule (SRLIS) (Pape & Wang, 2003; Zimmerman & Martinez-Pons, 1986, 1988, 1990). In previous research using the SRLIS, the frequency and variety of strategies related significantly to student achievement (Zimmerman & Martinez-Pons, 1986). Zimmerman and Martinez-Pons (1988) also tested the instrument for construct validity, finding evidence for convergence with a separate teacher rating scale. Students' perceptions of efficacy correlated significantly with strategic behaviors reported in the SRLIS (Zimmerman & Martinez-Pons, 1990). This study examined the breadth of strategy categories reported by students because high achieving middle school students (Pape & Wang, 2003) and high school students (Zimmerman & Martinez-Pons, 1986) have reported greater variety in strategy use. The quantitized SRL categories were then plotted graphically to allow me to assess the evolution of the quantity and variety of strategies reported by students, week-by-week. Finally, I compared the quantitized SRL categories with the results of the thematic analysis to see how they converged or diverged (Onwuegbuzie & Leech, 2006).

Strengths and Limitations of Design

A mixed methods design seeks to mitigate threats to validity (Johnson et al., 2007) and facilitate making stronger inferences than possible when relying solely on quantitative or qualitative designs (Teddlie & Tashakkori, 2003). I triangulated data related to the construct of SRL by comparing a priori and emergent coding of data collected in a weekly journal for students (see Appendix M). In addition, I triangulated data related to faculty self-efficacy by using the Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016) as well as open-ended questions in the postintervention faculty survey and interviews. The activities of the

process evaluation facilitated detecting and accounting for fidelity of the intervention (Rossow et al., 2011) by checking participant responsiveness (Dusenbury et al., 2003) and dose related to initial use (Baranowski & Stables, 2000).

Selection bias, which can manifest as history or maturation, was a concern because participants were not randomly selected. This can lead researchers to confound the impact of the intervention with the differences between populations (Shadish et al., 2002). History involves events outside the intervention that could potentially explain changes experienced by the participants, such as students adopting new learning strategies because these were taught in a separate course. Maturation refers to the natural development that participants experience over the course of the intervention period. Even without the intervention, the freshman college students might have evolved their learning strategies in response to the new learning environment.

The low number of participants presented another threat to validity. Threats to statistical conclusion validity reduced my confidence to draw inferences about the relationship between the variables under study. Low statistical power can prevent a study from noticing intervention effects (Shadish et al., 2002). In addition, students exhibited varied levels of participation in the intervention components. The unreliability of treatment implementation can occur when there is partial implementation of the intervention for some participants (Shadish et al., 2002).

To address the threat of selection bias, I employed nonequivalent dependent variables to address the threats of history and maturation (Shadish et al., 2002). If increases in reported SRL strategies did not accrue to the nonequivalent dependent variables, then it would be less likely that history or maturation were responsible for the changes observed. Coryn and Hobson (2011) indicated that nonequivalent dependent variables and dependent variables should be equivalently

connected to the construct being measured. To meet this expectation, the nonequivalent dependent variables were part of the SRLIS categories used to code responses for SRL (Zimmerman & Martinez-Pons, 1986, 1988, 1990).

Positionality

Milner (2007) asks us to consider how we negotiate and balance our own research interests with those of our participants. Core values of mine include justice and human dignity, and I see education as an important pathway to achieving these. As a result, I care about student success and making sure that the advice and training I give to faculty is both valid and useful. This has led me to love the very idea of evidence-based learning, which could bias me to favor certain practices. In addition, a focus on the presence of evidence-based teaching and learning practices can lead me to use deficit language regarding their absence. For example, I might indicate that certain strategies were not used by students instead of highlighting the strategies that the students did use. It is important for me to consider the viewpoints of my research participants, including their characterizations of what makes them successful as teachers and learners.

Another facet of understanding my positionality is to consider the situationality of my perspective (Haraway, 1991). I grew up as an English-speaking Quebecois. I was part of a minority (English) within a province whose political and social identity revolved around being a minority (French) in a majority English-speaking country. Experiencing and witnessing different facets of *minority*, along with speaking two languages, helped me to understand how our points of view are situated, and that there is a great deal of value in being able to shift my perspective. Recognizing my bias and the situationality of my perspective helps me to remain open to others'

viewpoints. At various stages of research, it is important that I verify how my assumptions influence my choices and my interpretations of the data.

Chapter 5

Findings and Discussion

This study examined the effectiveness of an intervention to increase faculty capacity to support first-year college students' self-regulation. The intervention sought to build faculty skills and confidence in coaching students to set goals, plan their work, monitor their use of learning strategies, and reflect on their learning process. Following a summary of the intervention's implementation, this chapter presents and discusses the results of the process and outcome evaluations, which are presented according to the research questions. The conclusion of the chapter includes limitations of the study and implications for future research and policy.

Delivery of the Intervention

The intervention was implemented as described in Chapter 4, though not exactly as originally envisioned. Due to delays at the Homewood Institutional Review Board, the intervention started eight weeks later than intended. The original goal was for the intervention duration to include the entire fall 2022 semester. Training was to be delivered to faculty prior to or right at the start of the semester and then faculty were going to be asked to assign students a weekly SRL journal for at least eight to 10 weeks. Prior research has demonstrated that capturing students' SRL in a situation-specific way, as learning is occurring, is more likely to identify actual behaviors than a global measure (Cleary & Zimmerman, 2004; Cleary et al., 2017). Global measures, such as self-report questionnaires that use rating scales, provide a de-contextualized view of SRL, but a situation-specific measure can capture students' perceptions and behaviors at specific moments in the learning process (Cleary et al., 2017; Zimmerman & Martinez-Pons, 1986). In addition, a longitudinal approach to supporting and studying SRL

behaviors can capture the uneven progress towards increased self-regulation over time (Becker, 2013; Fung et al., 2019).

Following IRB approval from both Johns Hopkins University and State University, faculty participated in three 90-minute training sessions in the first half of November 2022. The sessions were delivered in Zoom and focused on SRL topics such as the three phases of the SRL feedback loop defined by Zimmerman (1989, 2002) and SRL components such as task analysis, self-observation, and self-motivation beliefs (cf. Pape et al., 2013; Schunk, 2001; Zimmerman, 1989). In addition to examining the concepts and processes of SRL, the participants discussed the specific mechanisms to be implemented by faculty as part of the intervention study, including the assignment of weekly SRL journal prompts, the provision of growth mindset feedback, and the deployment of a learning strategies module for students into their LMS course site.

Faculty who are confident to support SRL are more likely to cultivate SRL with their students (Cleary et al., 2022; Dignath-van Ewijk, 2016; Tschannen-Moran & McMaster, 2009), therefore the intervention approach sought to leverage different sources of faculty self-efficacy. For example, task analysis was a specific topic covered in depth during the training sessions. I used verbal persuasion to explain the faculty role in helping students to conduct task analysis. Faculty also experienced vicarious learning through didactic presentations about the elements of task analysis and consideration of examples. Task analysis was described as a component of the forethought phase of SRL that involves goal setting and planning (see Figure 5.1). The faculty role in supporting task analysis was described as helping students to set effective goals, communicating to students the value of task analysis, and providing encouragement and scaffolding to help students plan their work. Finally, faculty participants had the opportunity to update an individual assignment to include scaffolding for task analysis, which represented an

opportunity for mastery experience. Appendix T includes a detailed outline of the faculty

training, including linkages between training components and sources of faculty self-efficacy.

Figure 5.1

PowerPoint Slide on the Student Role in Task Analysis, Faculty Training Session 1
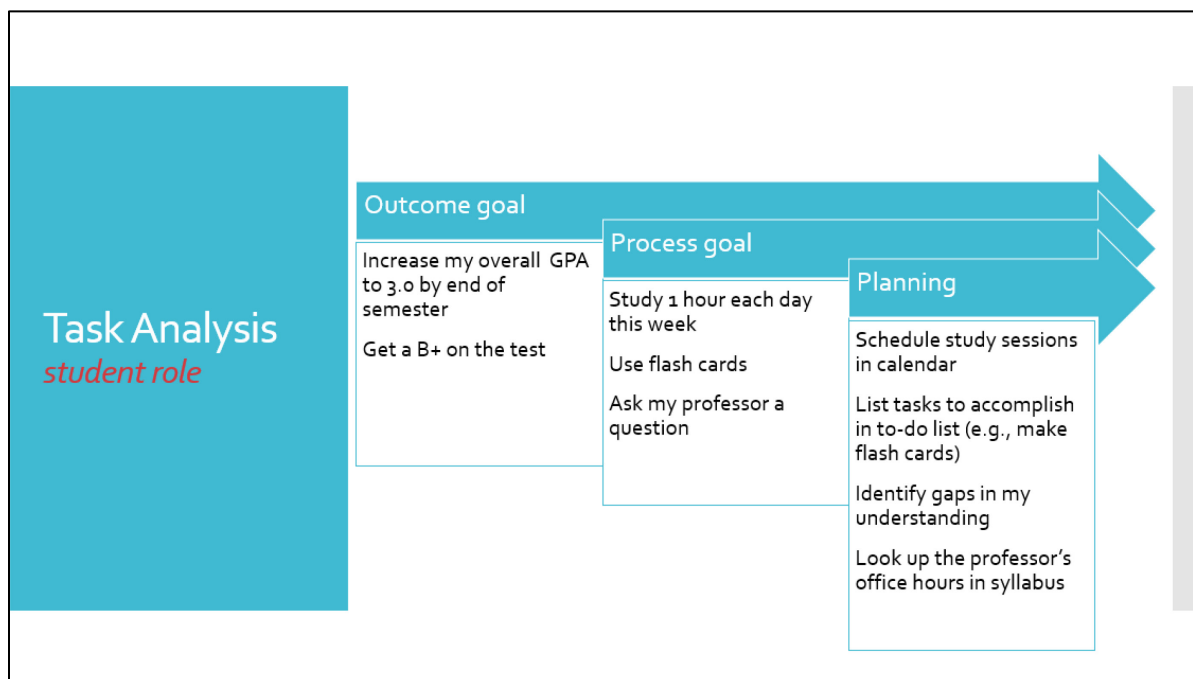
The faculty participants managed the student intervention components, which included

importing a learning strategies module (see outline in Appendix S) and assigning weekly SRL

journal prompts. All students in the participating College 101 courses were assigned these

components. Faculty data therefore encompasses their perceptions of student participation more

broadly than what is represented by the data from the participating students.

The late start of the intervention may have contributed to uneven fidelity of

implementation. Only one of the four faculty participants updated assignment prompts to

increase SRL scaffolding. The other three participants indicated that it was too late in the

semester to adjust the final assignments. The three student participants began their engagement

with the intervention in mid-November. None of them accessed the student learning strategies

module. The timing of the module's availability, a few weeks from the end of the semester, may

have been a factor. However, two of the three students did participate in SRL journaling for three

to four weeks.

Results of Process Evaluation

This process evaluation was guided by two components, including participant

responsiveness (Dusenbury et al., 2003) and initial use (Baranowski & Stables, 2000). In the

following sections, I discuss the findings based on quantitative and qualitative data collected.

Faculty Experience with SRL Training and Support

Participant responsiveness was defined as faculty and student engagement and

involvement in training and support activities. All four faculty actively participated in 4.5 hours

of training across three sessions. Participation in the training sessions included viewing

presentations of SRL concepts and processes; discussion of participants' experiences, challenges,

and ideas for supporting SRL; and opportunities for individual reflection. In the posttraining

survey, faculty rated their satisfaction and feelings of preparedness to provide SRL guidance on a

five-point scale. Faculty indicated satisfaction with the three training sessions ($M = 4.5$, $SD =$

1.00) and that they felt prepared to provide SRL guidance to their students ($M = 4.25$, $SD =$

0.96).

I asked faculty to list SRL strategies to support a hypothetical student, both prior to and

following the training. A separate vignette (see Appendices G and H) was used in each instance

to mitigate the potential threat to internal validity of familiarity with the instrument (Shadish et

al., 2002). I coded faculty responses using an a priori coding scheme (see Appendix R) based on

the SRLIS (Zimmerman & Martinez-Pons, 1986) and summarized the results in Table 5.1. The

increase in SRL strategies listed following the training was predominantly due to a single faculty member. Karen increased the strategies she listed from two to 15. Therefore, Karen accounted for 75% of all strategies provided by the four faculty participants in the posttraining survey. However, as shown in Table 5.1, the other three faculty participants all listed a slightly increased number of strategies and strategy categories following the training. The increase in the number of strategies and the number of categories represented by these strategies suggests that the training helped faculty to consider a variety of SRL strategies.

Table 5.1

Comparison of Pre-Post SRL Strategies Listed, By Instructor

Instructor Pseudonym	Strategies		Categories		Example
	Pre	Post	Pre	Post	
Shawn	1	2	1	2	"invite him to visit me during office hours"
Melanie	0	2	0	2	"keep a log of his studying"
Jenn	0	1	0	1	"willingness to provide help outside class"
Karen	2	15	2	8	"Did he make a plan using a schedule or list?"
Total	3	20	2	9	

Note. The SRLIS categories listed in response to the vignettes overlapped between the faculty participants. For example, three faculty provided examples of seeking teacher assistance (one category) in the post training survey. Each category total is a sum of the unique categories listed across respondents.

The value of the training varied by faculty participant as indicated in postintervention interviews and a survey. A theme that emerged was *intervention components were helpful*, including characterizations that the training, student learning strategies module, and SRL journaling were helpful for their practice in supporting first-year students. However, faculty also highlighted previous experience and knowledge, as well as training and support, that they

received outside of the intervention. A competing theme that emerged was related to *existing College 101 training and support*. The following paragraphs compare faculty participants' reactions to the intervention components.

Three of the four faculty characterized the training as a helpful review. According to Melanie, the training included "good reminders, particularly about the importance of specific language and the way in which phrasing the same kind of ideas in different ways can make a difference in students' perception of what you are saying, as well as their own potential." At the end of the intervention, Jenn said, "after the training, I could really pay attention to students' progress along this semester and that emphasized the importance of making improvements rather than the final result." She described a newfound appreciation for the concept of growth mindset, speaking at length about the gradual process of learning and the faculty role in helping students to steadily improve over time. On the other hand, two faculty had extensive experience with cultivating a growth mindset in students as well as with reflective journaling to encourage student metacognition. Melanie indicated, "growth mindset is something we've been doing for years. And so, it's not new, and I would say it's something that I do throughout, like that's just sort of the way I frame almost all of my feedback." Therefore, the training was a good review for two of the faculty participants (Melanie, Karen) and provided new content for the other two (Shawn, Jenn).

Two of the faculty participants described the value of the learning strategies module for students. Shawn described the module as exceptionally well done and Melanie indicated that it was the most valuable component of the intervention. Melanie summarized how she used the module with students: "They worked through it independently as homework and when we discussed those topics in class we evoked the modules explicitly. It was not as explicit in the

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feedback I gave, although sometimes I did reference a specific element." However, Karen referred to the lateness of the intervention as a reason for not actively using the module with students beyond inserting the module into the LMS course site. Karen indicated that at the point where the module was added, she had already established her support mechanisms. She did, however, indicate that she planned to use the module in a more substantial way in an upcoming course.

The student journaling component mainly occurred following the faculty training and was a key aspect of student participation. Faculty engagement with the SRL journaling was captured in the postintervention survey and interviews. Journaling was characterized as time well spent by the faculty participants. Faculty were asked to confirm this in the postintervention survey as a form of balancing measure. Similar to negative case sampling (Pope, 2017), a balancing measure attempts to detect unforeseen issues or evidence contrary to expectations (Bryk et al., 2015; Christie et al., 2017).

Faculty engagement with student journaling led to interesting reflections about the ways that journaling can benefit students and help faculty to support them. A theme that emerged was that *reflective journaling has varied benefits*, including the facilitation of metacognition, revealing student challenges, and prompting faculty to provide feedback. For example, Karen indicated that the journaling helped her to identify students who profess a fixed mindset. Jenn highlighted that it was through journaling that students were able to articulate their own challenges, which led students to also identify their own solutions. In addition, the journaling clarified for Jenn the sorts of challenges that students were facing. "They do have some very specific reasons why they are not doing well. I think that helps both students and the instructor to

understand what's going on and how to improve." I explore faculty perceptions of the value of SRL journaling further below as an outcome contributing to faculty self-efficacy to support SRL.

An emergent theme in the Chapter 2 Needs Assessment Study was that faculty engaged with the parts of self-regulation but did not characterize SRL as a system. The intervention sought to help faculty consider support for SRL as a system including phases of forethought, performance, and reflection. In the postintervention interview, Karen characterized SRL in terms of a feedback loop, including different phases that iteratively influence each other. Karen discussed how she connected the SRL journal prompts to a specific project and attempted to scaffold the students through to completion of the project.

I took their final project, and I broke it down into about five different pieces. And then what I did is use this reflection journal and prompting, and I could combine that with two of [the pieces]. So, I said, "Okay, this is where we need to go. What did you do last week? What are you doing next week? What's gonna [*sic*] be the hardest thing for you to do?" And I repeated that for every piece. As soon as they completed one, it was like, "Okay, let's reflect on what you did. What's the next step that you're gonna [*sic*] do? How are you gonna do it?" And I think that really started to give the students some guidance about thinking about their learning, so a little metacognition there, as well as trying to really plan out how and why I broke it down the way I had. And also where they needed to go, because I gave them the skeleton, but they had to build the meat on it.

Karen adapted the SRL journal activity by combining it with a final project and in so doing provided scaffolding to support student task analysis and metacognition through reflection. The intervention helped Karen to support SRL as a process.

Student Experience with SRL Training and Support

Students only partly engaged in the intervention components, as depicted in Table 5.2. I collected evidence for participant responsiveness through observations of the LMS, including examination of page views for the student learning strategies module, results from four brief quizzes included in the module, and submission of SRL journals. There was no evidence that students participated in the learning strategies module during the intervention period. Two participating students (Bruna and Carmen) completed SRL journaling assignments, demonstrating a limited engagement with the intervention. Bruna submitted all four assigned journal entries and Carmen submitted entries for three of the four assignments.

Table 5.2

Student Participation in Intervention Components

Student Pseudonym	Instructor Pseudonym	LS Quizzes Administered	LS Quizzes Taken	Number SRL Journal Assignments	SRL Journal Entries (Submitted)	Page Views in LS Module
Bruna	Melanie	0	n/a	4	4	0
Carmen	Jenn	4	0	4	3	0
Jason	Karen	4	0	3	0	0

Note. Intervention components for students included a learning strategies (LS) module, which included four optional self-check quizzes that faculty participants had the option to assign. In addition, faculty participants assigned a weekly SRL journal.

Faculty Implementation of Intervention Components

Leviton and Lipsey (2007) described the process of change for a basic two-step model in which critical inputs such as training will lead to key mechanisms related to the change sought by the intervention. In the Theory of Treatment (Figure 4.1), faculty training was expected to lead to key mechanisms that included faculty updating assignment prompts to scaffold SRL,

assigning weekly journal prompts to facilitate student engagement in SRL, and using wise

feedback to promote a growth mindset among students. In addition, I asked faculty to include a

learning strategies module for students in their LMS course sites. These key mechanisms were

designed to support student self-regulation and make students' academic behaviors visible to

their professors. To answer the second research question about faculty implementation of

intervention components, I conducted observations of courses in the LMS and examined

responses to the postintervention survey and interviews.

Faculty implementation of intervention components for students is summarized in Table

5.3. All four faculty participants agreed to add the learning strategies module for students into

their courses. Melanie had inserted the learning strategies module into her course at the start of

the semester, but the other faculty participants added the module into their courses in early

November during the faculty training phase. The module included brief quizzes to act as

formative knowledge checks for students. The quizzes were included in three of the four College

101 courses; Melanie opted to remove the quizzes from the module in her course.

Table 5.3

Faculty Implementation of Intervention's Key Mechanisms

Instructor Pseudonym	LS Module Administered	LS Quizzes Administered	SRL Journals Administered	SRL Scaffolding in Assignment Prompts	Frequency of "wise" Feedback
Shawn	Yes	Yes	4	No	Sometimes
Melanie	Yes	No	4	No	Most of the time
Jenn	Yes	Yes	4	No	-
Karen	Yes	Yes	3	yes	About half the time

Note. The implementation by faculty of key mechanisms was recorded through observations of the course sites in the LMS except for frequency of wise feedback, which was self-reported by faculty in the postintervention survey.

In terms of the actual use of the learning strategies module, only Melanie indicated that she actively incorporated the module by asking students to review parts and reflect on the lessons. For the other faculty participants, the module was available in their course sites but not discussed with students beyond alerting them to its availability. Karen indicated in the postintervention survey that the module became available too late in the semester to be integrated into her approach.

Faculty assigned SRL journal prompts in the last three to four weeks of their courses. I requested that the faculty assign each journal as a standalone assignment each week. In practice, the precise assignment of the journal prompts varied across faculty participants in several ways. Three of the faculty participants inserted the prompts as standalone assignments; Karen embedded the prompts in assignments connected to a final project. Shawn and Jenn created assignments in the LMS, allowing for digital submission of the journals. For Melanie, journaling throughout the semester was done in a physical blue book as a classroom exercise. Melanie therefore decided to assign the SRL journal prompts as the final four reflective journal exercises in the blue books.

The faculty training included discussion of growth mindset. We examined how interventions with college students have helped underrepresented students to achieve higher grades (Aronson et al., 2002; Fink et al., 2018; Yeager et al., 2014) and to uptake faculty feedback on assignments (Yeager et al., 2014). In the training, I advocated for faculty participants to use the wise feedback approach described by Yeager and colleagues (2014),

which includes acknowledging to students that a learning task is a challenge and affirming that students are capable of achieving the task. As depicted in Table 5.3, faculty rated their implementation of wise feedback along a spectrum ranging from sometimes to most of the time.

The interviews elaborated some of the ways that growth mindset feedback was implemented and revealed a discrepancy between offering growth mindset feedback in a general sense versus the wise feedback version. Karen indicated that she provided growth mindset feedback conditionally if she perceived students to exhibit a fixed mindset. She said, "This feedback was provided to students whenever I heard or read any type of 'I am just not good at X' statements." Shawn listed when and where he provided this feedback, including in response to assignments and discussions, as well as in whole class or individual conversations with students. Melanie indicated that this type of feedback was embedded throughout and was a frame for nearly all her feedback. However, when prompted in the interviews, Melanie and Jenn indicated that they did not usually acknowledge the difficulty of the task. Both characterized their assignments as not particularly difficult and felt that it would be disingenuous to say so to students. They both felt that the issue was rather students' motivation to complete the task at hand.

Faculty did not add SRL scaffolding to assignments, except Karen, who modified the SRL journal assignments to associate them with a final project for the course. Karen's approach is summarized above in the results for the first research question. The intervention only started in the last third of the semester. Similar to faculty reports about the student learning strategies module, the lateness of the intervention was cited by three faculty participants as a reason for not adding SRL scaffolding to assignment prompts.

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Summary of Process Evaluation

The process evaluation produced an accounting of the intervention activities. The four faculty participants engaged with the training sessions. Each listed more strategies to support a student scenario than prior to the training. All four expressed satisfaction with the training and individually praised one or several of the intervention components. Faculty all shared rich descriptions of why student journaling was valuable. In addition to administering the SRL journal prompts, all four made the student learning strategies module available in their Canvas course sites. However, three of four faculty reported that it was too late in the semester to add SRL scaffolding to assignment prompts. Student participants did not interact with the training module and only two of three completed most of the SRL journal assignments. Taken as a whole, the findings from the process evaluation suggest that faculty engaged substantially with the intervention and student engagement was limited to journaling.

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Results of Outcome Evaluation

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I assessed students' growth mindset in a one-group pretest-posttest design (Shadish et al., 2002) through preintervention and postintervention administration of the Growth Mindset Scale (Dweck et al., 1995). I used a time series design to display the frequency of students' SRL strategies as reported in weekly journal entries. Journal entries were also subjected to thematic analysis. Finally, I examined faculty self-efficacy to support SRL through quantitative and qualitative data collected in the Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016) and open-ended responses to the postintervention survey and interviews.

Students' Growth Mindset and Reported Strategy Use

I administered the Growth Mindset Scale (Dweck et al., 1995) to students in preintervention and postintervention surveys. Two of the three student participants completed

both iterations. Given the small sample size, the responses by the two students with complete

data are considered individually. In their responses to the survey, both students selected the same

rating for all three items in the scale. Carmen demonstrated an increase in growth mindset

between the preintervention survey ($M = 3.0$, $SD = 0.0$) and postintervention survey ($M = 5.0$, SD

$= 0.0$). On the other hand, the mean for Jason remained unchanged at 5.0 ($SD = 0.0$). For

comparison, Wang and colleagues (2021) surveyed 2,102 college American college students

using the Growth Mindset Scale ($M = 4.42$, $SD = 1.24$).

Two of the student participants participated in the weekly SRL journaling. Bruna

submitted all four journals assigned and Carmen submitted three of four assignments. I employed

the SRLIS as an a priori coding scheme to record students' SRL strategies as well as the number

of strategy categories. The journal entries were independently coded by a separate student

researcher as a validity check. Upon comparing and discussing our coding, we attained 100%

agreement on the coded strategies and categories for both students. In addition, my dissertation

advisor reviewed a sample of the results of the journal coding as a separate audit. The results

were then plotted graphically for each student in Figures 5.2 and 5.3.

Bruna primarily reported strategies related to the category of environmental structuring.

For example, she wrote, "I might get distracted on my phone," so Bruna indicated that she would

"keep [my] phone on airplane mode." In addition, Bruna tried to reduce distraction by studying

in a quiet spot in the library. Bruna also reported using strategies related to self-consequences

and seeking adult assistance. As depicted in Figure 5.2, Bruna reported one to three strategies

across the four weeks of SRL journaling. A slight dip in the third entry was followed by the

highest number of strategies in the fourth week. For Bruna, the number of categories remained

flat; two categories of strategies were reported in three of the four journal entries.

Figure 5.2

SRL Strategies and Categories by Journal Entry for Bruna

	11/6	11/18	11/29	12/6
Strategies	2	2	1	3
Categories	2	2	1	2
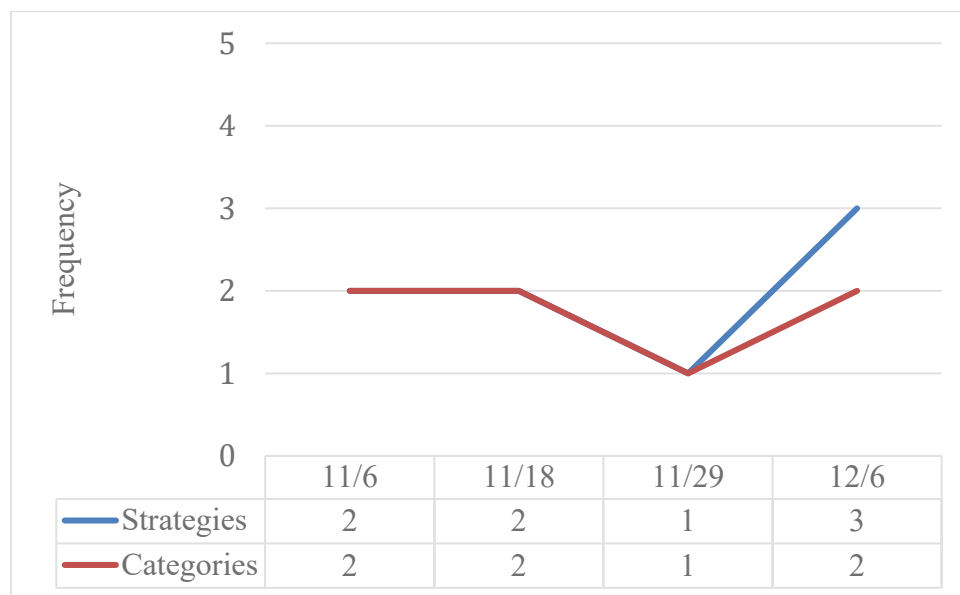
Carmen reported a progressive increase in the quantity of both strategies and categories across three journal entries, as depicted in Figure 5.3. The number of strategies increased from two to four, while the categories increased from one to three. In addition to a greater number of categories week-to-week, the categories differed based on the student's specific concerns. For example, on November 20th, Carmen described examples of planning and self-consequences. In terms of planning, she wrote, "I used my School Assistant app, to help me stay on top of things." On December 7th she described examples of seeking teacher assistance, reviewing tests, and reviewing notes.

Figure 5.3

SRL Strategies and Categories by Journal Entry for Carmen

	11/13	11/20	12/7
Strategies	2	3	4
Categories	1	2	3
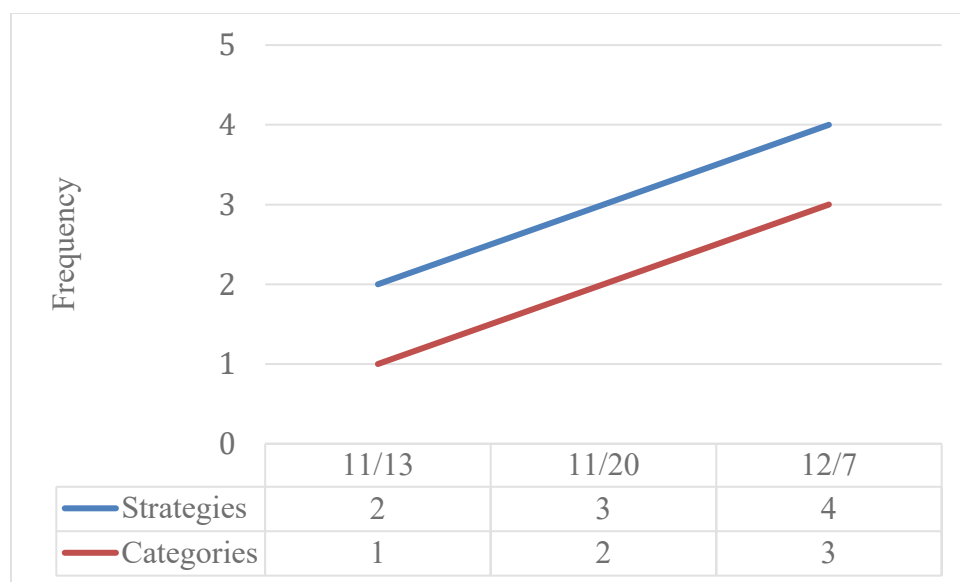
I captured the variety of strategies reported by students across their journal entries (see Figure 5.4). In four journal entries, Bruna reported strategies related to three SRLIS categories, including environmental structuring, self-consequences, and seeking adult assistance. Carmen shared examples from five categories, including goal-setting and planning, self-consequences, seeking teacher assistance, reviewing tests, and reviewing notes. The SRLIS contains 14 categories, the majority of which were not identified by the two students. For example, the five categories highlighted by Carmen represented just 36% of the SRLIS.

Figure 5.4

Quantity of SRLIS Categories in Journal Entries, by Student
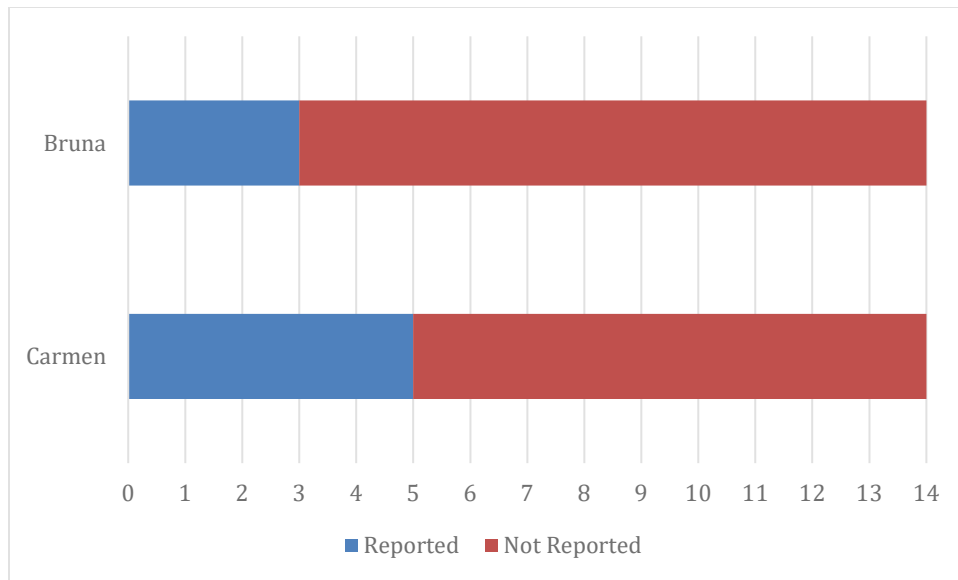
In addition to coding the journal entries using the categories of the SRLIS, I examined the journals for emergent codes to identify additional student practices or concerns. A theme that emerged from both students' entries was *preventing procrastination*. Bruna described getting "stuck while trying to write" and in multiple weeks she worried about getting distracted by competing interests. Carmen indicated, "it's hard to get started sometimes" with assignments. Both students described challenges to accomplishing their academic work in similar ways. Likewise, both referred to environmental structuring and self-consequating as types of strategies to address the challenge of procrastination.

The intervention study sought to measure changes in students' growth mindset and use of strategies across the intervention. However, it is possible that students' reported changes in growth mindset and strategy use could be attributed to existing faculty supports or due to natural maturation across the semester. Carmen showed an increase in ratings towards a growth mindset and no direct evidence was found from her College 101 professor, Jenn, that she had discussed growth mindset with her students prior to the intervention. Therefore, it is possible that Carmen

was influenced by feedback from Jenn as a result of the intervention. However, there was evidence from the other three faculty participants that they used growth mindset feedback prior to the intervention. It is also difficult to infer from the journal entries that the intervention was responsible for students' reported strategy use.

As a validity check, I selected two of the SRLIS categories, self-consequences and seeking adult assistance, to be nonequivalent dependent variables. Neither of these SRL categories was explicitly addressed in the student learning strategies module or the faculty training. According to Shadish and colleagues (2002), using nonequivalent dependent variables can help researchers to identify whether changes during an intervention might be due to alternative explanations rather than the intervention itself. Both students' journal entries included examples of strategies related to rewarding oneself (self-consequating) and Bruna also reported seeking help from State University's Center for Academic Success and Achievement, which offers tutoring support and accommodations services. Therefore, at least some of the strategies reported in the journals had sources outside the intervention. Combined with the lack of evidence from observations of the LMS that students reviewed the learning strategies module, it is not possible to confidently attribute the intervention as a source for the strategies that students reported in the SRL journals.

Faculty Confidence to Support SRL

I used quantitative and qualitative measures to triangulate faculty's reported self-efficacy to support student SRL. I administered the Teacher Self-Efficacy Scale for Promoting SRL in preintervention and postintervention surveys. In addition, faculty described their experiences and perceptions in open-ended questions included in the postintervention survey and interviews.

Table 5.4 compares qualitative and quantitative evidence related to two of the main qualitative

themes that emerged.

Table 5.4

Comparison of Faculty Confidence in Qualitative and Quantitative Data

Qualitative Theme	Examples of Qualitative Responses	Selected Items from Teacher Self-Efficacy Scale for Supporting SRL *M* (*SD*)	
		Pre	Post
Faculty Self-Efficacy to Support SRL	"I would like to use this strategy with my [course title redacted] class in the spring right from the start. I think it will be good for the students to monitor their own learning better and also be able to track progress easier." (Karen)	"Get students to consistently track how well they learn" 2.00 (0.82) "Help students identify the learning strategies that work best for them" 3.50 (1.29)	2.67 (0.58) 4.00 (0.0)
Student Disengagement	"I frequently encounter students who will say and write all the right things in class, but then do not do their work outside of class and that does not change despite any intervention I make." (Melanie)	"Give feedback that helps students improve future learning behaviors" 4.25 (0.50) "Find ways to help struggling students experience success" 3.50 (0.58)	3.67 (0.58) 3.33 (0.58)

Faculty described slightly higher self-efficacy with supporting SRL in the Teacher Self-

Efficacy Scale for Supporting SRL. The overall mean increased slightly from 3.28 (*SD* = 1.26)

to 3.47 (*SD* = 1.53) on a five-point Likert-scale. By comparison, an intervention with high school

teachers by Allshouse (2016) recorded a pretest mean of 3.52 (*SD* = 0.93) and a posttest mean of

3.92 (*SD* = 0.49). Allshouse did not find a statistically significant difference in self-efficacy for

promoting SRL but noted that the small sample caused the study to be underpowered; it was

possible that a significant effect could not be identified due to the potential for a Type II error. In

the present study, the item with the greatest pre-post gain was also the item with the lowest mean

in the preintervention study. "Get students to consistently track how well they learn" increased from 2.00 ($SD = 0.82$) to 2.67 ($SD = 0.58$).

Three of the ten items had lower means following the intervention, including slight decreases for "Motivate students to try harder in school" and "Find ways to help struggling students experience success". Of interest, the item on the preintervention survey with the highest mean, "Give feedback that helps students improve future learning behaviors" ($M = 4.25$, $SD = 0.50$) decreased postintervention ($M = 3.67$, $SD = 0.58$). Although this finding was surprising given that the intervention provided strategies to support learning behavior, the result aligns with the qualitative theme of *student disengagement*, described in detail below. The result could also possibly reflect an implementation dip, which can result when new learning is not easily implemented at first (Rohlwing & Spelman, 2014; Tschannen-Moran & Chen, 2014).

Qualitative data from the postintervention survey and interviews of faculty included descriptions of increased confidence to support SRL. All four faculty expressed a degree of confidence in their skills. According to Jenn, "I think I'm more confident right now. I definitely need more experience to implement those tools when I teach the similar level classes in the future. It's a good start." Jenn also indicated her newfound ability to track students' progress during the semester and to emphasize the importance of making gradual improvements. Moreover, Jenn, who had not employed journaling prior to the intervention, attributed students' improved time management at the end of the semester to the journaling activities.

Plans for the Future

Faculty expressed plans to continue promoting a growth mindset and to use reflective journaling in the future. Following the intervention, Shawn indicated that he provided a lot more frequent growth mindset feedback, "especially with the journals, but with all the assignments."

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Shawn and Jenn described emphasizing the gradual process of learning with their students. Shawn referred to the metaphor of climbing a mountain: "When you're done, go to the next one. Get that one done, and this is how you proceed. One step at a time, and you climb over the mountain." Jenn shared that the training helped her to understand the importance of viewing students' growth over time in the quality of their work, indicating, "I think to be reminded that the growth procedure is more important than the final result is very helpful to me." Jenn's focus on growth and Shawn's mountain-climbing analogy align with mindset theory, which characterizes a growth mindset as involving persistence in the face of difficult tasks (Dweck et al., 1995; Dweck & Yeager, 2019). Moreover, Jenn highlighted that focusing on growth supported student uptake of assignment feedback. Jenn rewarded students for incorporating previous comments into subsequent submissions, indicating, "If you incorporated the previous comments from the instructor into a new assignment, and then you got a higher grade this time, I think students put more attention on those comments later on." Jenn identified her own role in encouraging students to adopt feedback, which was to recognize the progress that students made from one submission to the next. Yeager and colleagues (2014) similarly found a relationship between supporting students' growth mindset and the uptake of assignment feedback.

All four faculty participants indicated plans to use reflective journaling in the future. According to Karen, "I would like to use this strategy with my [course title redacted] class in the spring right from the start. I think it will be good for the students to monitor their own learning better and also be able to track progress easier." Plans to continue using journaling and teaching a growth mindset offer additional evidence for increased confidence to support SRL. Qualitative evidence about intentions to use journaling aligned with postintervention increases for items of the Teacher Self-Efficacy Scale for Promoting SRL, including "Get students to consistently track

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how well they learn" and "Help students identify the learning strategies that work best for them" (see Table 5.4). Faculty assigned the journals to all students in their College 101 classes, not just the students participating in the study. Therefore, faculty statements about the experience were based on their overall experience.

Varied Benefits of Journaling

Faculty reported in interviews and the postintervention survey that reflective journaling had varied benefits. The benefits of journaling included supporting student metacognition, prompting faculty to give feedback about SRL, helping them to understand their students' learning needs and gain insight into students' mindset, revealing students' individual challenges, and helping faculty to connect personally with their students. These benefits are detailed in the following paragraphs. According to Bandura (1997), different factors influence the impact of a performance experience on one's perceived self-efficacy. Examples include the degree of attention paid to the experience, situational factors, and one's emotional state. Such factors are especially likely to influence self-efficacy in the earlier phases of mastery (Bandura, 1997). Faculty indicated in the postintervention survey that journaling was time well spent. In addition, they identified a variety of benefits in the interviews. By reporting different ways that journaling was successful, faculty provided evidence of their growing confidence to employ journaling in future courses.

Journaling facilitated student metacognition through reflection about their successes, challenges, and planned strategies. For example, Jenn highlighted that students acknowledged why they missed deadlines, providing specific reasons. She added, "Once they started to do the journal Steve assigned to students, they started to really do self-reflection about what they did and what they missed. And they started to be aware of those things they didn't do well in class."

Metacognitive monitoring helps students to assess their academic performance and make

informed choices about how to change their behavior (Häfner et al., 2014; Nietfeld et al., 2006).

Melanie similarly noted that students tended to be quite insightful about why they did not do well

on an assignment and what they could do differently, while Karen noted that journaling provided

students with guidance in thinking about their learning.

Journaling was already a pedagogical approach used in College 101 courses prior to the

intervention, as reported in the needs assessment study in Chapter 2. However, it was rarer for

faculty to specifically report that they encouraged self-monitoring of students' behaviors and

strategies through the journal prompts. Based on the literature review in Chapter 3, I determined

that journaling was a potentially effective approach for prompting student metacognition (Arsal,

2010; Berthold et al., 2007; Dörrenbächer & Perels, 2016; Fung et al., 2019; Schmitz & Wiese,

2006). Therefore, the faculty reports indicating that journaling facilitated student metacognition

was an expected finding.

A second expectation of student journaling was that it could prompt faculty feedback

about student SRL. Self-regulation does not necessarily occur without support (Bernard-Brak et

al., 2010), so faculty can play an important role in the development of self-regulation skills

(Beishuizen, 2008; Paris & Paris, 2001). Three of the four faculty participants shared how

student journaling prompted them to reach out to students. For example, Karen reflected on

various ways that the journaling supported her to follow up with students.

> I really appreciated the journaling. It also allowed me to follow up, especially when the
>
> student hadn't done well on one of my assignments, and I'd reach out. They didn't
>
> necessarily come to me immediately. In some of the journaling I could get an idea of, are
>
> they having time management problems? Are they afraid to reach out to resources? Do

they have the closed mindset that, you know, "only weak students ask for help" as opposed to, "No, only weak students don't ask for help." So journaling is invaluable. Karen used the journals to help her identify students' challenges and then ask them questions about those challenges. Shawn also monitored the challenges identified by students in their journals and would then respond in the Canvas LMS as well as in follow-up conversations. The value of scaffolding was reinforced for Shawn. Journaling revealed student perceptions of coursework and their understanding of expectations, which made the value of slowing down and providing guidance more apparent to Shawn.

Not all challenges identified by students in their journals were academic in nature. Some students highlighted personal or contextual issues. One international student relayed to Shawn that they were from far away, their family spoke a different language, and they were having trouble making friends. Jenn said that understanding students' specific challenges helps faculty to develop empathy when students fail to submit assignments on time. Reading about students' various challenges provided faculty with an opportunity to better understand students at an individual level.

An unexpected finding was that journaling about SRL facilitated a personal connection between faculty and students. By learning about students' challenges and contextual factors, the faculty were able to ask students about their lives and experiences. For example, Shawn indicated how the journal facilitated check-ins with individual students:

So, it allowed me to do a lot of these sorts of things where you follow up and I think it's unexpected for the student. But you can say, you know, after a week or two to the student: "Hey, how's it going with X?" And then the student understands that you actually read this thing and then you were thinking about it.

These statements sometimes prompted Shawn to reach out to students to learn more about their lives outside the classroom. Shawn's attention to these experiences in postintervention recollection could be an example of how "selective self-monitoring can enhance beliefs of personal efficacy if one's successes are especially noticed and remembered" (Bandura, 1997, p. 86). This example, like the other benefits of journaling that faculty identified, indicated what faculty noticed and remembered about their experience with student journaling. Positive recollections such as these could have contributed to their sense of confidence to use journaling in the future.

Student Disengagement

Faculty participants made substantial efforts to reach their students, recognizing that first-year students in particular would need different kinds of support to help them succeed. However, three of the four faculty participants indicated that they were not confident in how to reach disengaged students. The theme of *student disengagement* emerged from the postintervention survey and interviews and aligned with the postintervention drop for certain items in the Teacher Self-Efficacy Scale for Promoting SRL (see Table 5.4). According to Melanie, "I frequently encounter students who will say and write all the right things in class but then do not do their work outside of class and that does not change despite any intervention I make." Despite reminders and other forms of encouragement, a subset of students did not actively engage in academic work. According to Karen, encouragement, outreach, and cajoling alike failed to convince some students to show up and participate in class or do the homework. Jenn echoed this sentiment, adding that some students showed little interest in participating in and out of class.

Faculty were unsure of how to solve the problem of student disengagement, but they did share a variety of potential factors that could be categorized according to personal, behavioral,

and environmental influences. Social cognitive theory argues that these influences reciprocally affect human functioning (Bandura, 1977, 1986, 1997). Personal influences reported by faculty participants included a mid-semester drop in students' motivation perceived by Shawn. He noted that in October, students suddenly began expressing a sense of exhaustion. He connected this collective drop in motivation to students' statements about falling behind, indicating "they don't feel like they can come back." Shawn perceived that students' self-beliefs about learning can impact their behavior. Faculty participants' enthusiasm for growth mindset, described in detail above, is another indicator that faculty perceived that their students' self-beliefs were a factor. Finally, Melanie and Jenn said that some students were aware of what they needed to do but would procrastinate or not complete the task at all, which reflects the influence of student behavior.

Disengaged students did not practice help-seeking behaviors, according to Karen. In Chapter 2, the theme of *students who need help* emerged from faculty perceptions that the students most in need of SRL guidance were less likely to take advantage of it. First-generation students, who make up the majority of undergraduate students at State University, are more likely to exhibit help-seeking avoidance than their continuing-generation peers (Kim & Sax, 2009; Longwell-Grice & Longwell-Grice, 2008). Karen noted the same issue in the postintervention interview, indicating that it was students who already had higher grades who would show up to office hours rather than students who were failing. Melanie shared that while students could recognize their challenges and particular solutions, some students struggled with "the follow through of applying those things." Speaking to students' lack of active engagement, Jenn indicated that this was her first opportunity to teach first-year students, and she struggled with how different their behaviors were from more mature undergraduates.

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Faculty also mentioned environmental influences on students. The Covid-19 pandemic was mentioned by Shawn and Melanie as a potential cause for student disengagement. Melanie said, "I think it was always a question and a challenge. But the last couple of years I'm seeing it in much, much greater numbers." Melanie noticed that the increase in student disengagement coincided with the timeframe for remote learning. Shawn wondered whether remote learning, which made resources more readily available on demand, could have increased students' temptation to skip class, push off learning until later, and then never get around to it.

One factor that bridged personal and environmental influences was students' academic preparedness entering college. The *high school to college gap* was another theme that emerged from three faculty interviews. Faculty characterized some students as being surprised or unaware that college would involve a more substantive effort and degree of self-regulation than had been required in high school. According to Karen, "In terms of student self-regulation, it was abundantly apparent that the students that we had this semester certainly had very little to none of it." Karen's perspective aligns with the finding that Bruna and Carmen both had room for improvement in terms of the variety of SRL strategies they reported using. Similarly, Jenn felt that students' high school experience had not provided them with the sense of rigor necessary for college and that when encouraged to update their strategies some would balk, indicating that their strategies had worked for them so far. The faculty participants believed that the high school learning environment had both insufficiently prepared students for college academics and had instilled a false sense of confidence. Overconfidence bias tends to affect students who are less successful academically (Atherton, 2014; Morales, 2012; Serra & DeMarree, 2016). Ultimately, student disengagement presented a challenge to faculty participants' confidence to support student SRL.

Alternative Explanations for Faculty Self-Efficacy

A finding that points to an alternative explanation for faculty self-efficacy to support SRL was that faculty were supported by sources outside the intervention. Faculty highlighted previous experience and knowledge, as well as training and support, that they received outside the intervention. Shawn noted additional training he received from the College 101 program, as well as communication with other faculty teaching in the College 101 program, as important sources of support. In terms of using growth mindset guidance with students, Melanie and Karen had both taught first-year students for several years and the growth mindset component of the intervention was not new to them. In terms of reflective journaling, three of the four faculty employed some form of journaling prior to the intervention. They used the SRL journal prompts associated with the intervention only in the last four weeks of their courses. Melanie noted that there were elements in the prompts that were very useful and worth incorporating in future journaling exercises, but she also noted that her students characterized the prompts' repetitiveness week-to-week as boring. Instead of continuing to use the consistent prompts week-to-week, in the future Melanie planned to return to employing a variety of reflective prompts and closely tying these to learning tasks as they evolved. Therefore, Melanie entered the intervention already experienced and knowledgeable with the process of reflective journaling. The journaling component of the intervention provided her with a limited degree of added value for her practice. On the other hand, Jenn had not practiced reflective journaling prior to the intervention, and she characterized the journal as, "definitely a good tool for instructors to understand each student, especially students who are not doing very well in class." Therefore, as noted in the results for the first process research question, the intervention's impact on faculty differed from individual to individual and was influenced by their relative experience with teaching first year students.

Faculty rated themselves as slightly more confident to support SRL, which aligned with qualitative evidence related to growth mindset and the use of reflective journaling. Faculty faced a challenge with student disengagement, a negative influence on their self-efficacy. In addition, evidence for faculty self-efficacy to support SRL cannot be confidently attributed to the intervention due to external supports faculty received, including from the College 101 program and from faculty colleagues. However, some of the faculty statements connected directly to the intervention. For example, Jenn had not previously used reflective journaling and highlighted her growing understanding of the importance of a growth mindset. The following section includes discussion of implications and limitations of the study findings.

Discussion

The intervention deployed faculty training and a learning strategies module for students. Faculty then asked students to journal about their use of learning strategies. Cleary (2018) argued that to support student SRL, teachers should help students to think in the language of strategies. Although student data connecting the intervention components to their reported strategy use was inconclusive, faculty reported a variety of ways that they supported students, from encouraging a growth mindset to asking students to monitor their learning.

Two first-year students journaled across a three to four-week period about their weekly challenges and strategies. They reportedly used strategies reflecting three and five categories of SRL. As depicted in Figure 5.4, students reported strategies from a small number of the 14 strategy categories in the SRLIS. Previous research has related student achievement (Pape & Wang, 2003; Zimmerman & Martinez-Pons, 1986, 1988) and student self-efficacy (Zimmerman & Martinez-Pons, 1990) to students' varied use of strategies. Therefore, this study's data suggest there is significant room for growth in the two students' repertoire of SRL strategies.

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It is possible that if the study had monitored the students' use of strategies for a longer duration, additional categories of strategies could have emerged. In addition, although rooted in the weekly experience of each student, the data collection still relied on a self-report measure, which may have underestimated students' actual behaviors. To acquire a more detailed picture of student perception and behavior, future research could employ longitudinal data collection that uses different types of SRL measures (cf. Cleary et al., 2017).

The journal entries gave faculty a window into how their students perceived their challenges as well as the students' ideas for how to successfully complete their coursework. A complex array of factors impacts first-year students' chances of persisting beyond the first year of college (see Figure 1.1 in Chapter 1). Therefore, when faculty asked their students to monitor their learning, the professors supported more than student metacognition; the journaling also helped faculty develop a deeper understanding of the factors impacting their students. A key component of providing scaffolded support is to diagnose individual learners' needs (Azevedo & Hadwin, 2005). Equipped with better understanding of students' respective SRL zones of proximal development, faculty can engage their students in conversation about learning strategies. Dialogue about the strategies that are appropriate to use under particular circumstances is a helpful way for faculty to scaffold students to think in the language of strategies (Bell & Pape, 2012; Pape et al., 2003).

Data collected for the process evaluation helped me to understand participants' experiences with the intervention. For example, faculty attributed a high value to the process of reflective journaling. I also gained insight into the limitations of the study, such as low fidelity with certain intervention components. A process evaluation by Rossow and colleagues (2011)

identified issues with implementation fidelity, which helped the authors to identify possible explanations for the results observed.

A process evaluation also supplies data that can be used to inform improvement (Stufflebeam, 2003). According to Bryk and colleagues (2015), we can measure processes to identify variations in performance. Some deviations are positive and represent models for improvement. I identified an unexpected deviation from fidelity of implementation in the present study's process evaluation, which could represent an example of positive variation. Although I requested that faculty assign the journals as standalone assignments, Karen integrated the SRL journal prompts into a project. She argued that connecting the prompts to the project would help students to reflect more directly on their processes and challenges with completing the project. If Karen was correct, investigating her experiences and those of her students could potentially reveal ways to improve the usefulness of reflective journaling assignments for students. Interventions in college courses are likely to produce deviation of implementation because professors have autonomy in their classrooms. It is therefore important to capture variation when it occurs.

Limitations

The quasi-experimental design and the lack of control groups reduce my confidence with making causal inferences related to the study findings (Lochmiller & Lester, 2017; Shadish et al., 2002). The sample size and low student exposure to certain intervention activities present threats to statistical conclusion validity. In terms of sample size, four of the eligible 16 faculty teaching in the College 101 program participated in the study. Of the 73 students enrolled in the five participating sections, only three students (4%) participated. The small sample resulted in low statistical power and impacted the generalizability of the findings. In addition, Baranowski and

Stables (2000) defined exposure to an intervention as the extent to which participants accessed or received intervention content. Three of four faculty participants did not add SRL scaffolding to assignments, one of the intervention components. In addition, student participants did not access the learning strategies module during the intervention period, which limited their exposure to intervention training content. In combination, low statistical power due to the small sample size and partial implementation of intervention components presented threats to statistical conclusion validity (Shadish et al., 2002). Finally, the duration of the intervention was a limitation of the study. Ongoing supports help faculty to adopt evidence-based teaching practices (Bathgate et al., 2019) and improve their self-efficacy with specific teaching practices (Tschannen-Moran & McMaster, 2009). The late start of the intervention reduced opportunities for providing ongoing guidance to faculty. The dosage for faculty amounted to less than the 20 hours recommended in professional learning literature (Desimone, 2009).

Implications for Research

Educational research mainly occurs in the field rather than in the laboratory, introducing variables that are difficult to control. Researchers can employ procedures to increase the validity and trustworthiness of study findings. I employed a mixed methods design to gain a more holistic understanding of the intervention as described in the research (Johnson et al., 2007; Teddlie & Tashakkori, 2003). The process evaluation facilitated accounting for fidelity of intervention (Rossow et al., 2011). In addition, Cresswell and Miller (2000) classified nine specific procedures to support trustworthiness according to three research paradigms and three different lenses, including the researcher, study participants, and external reviewers (see Table 5.5). This dissertation employed triangulation, member checking, the audit trail, disconfirming evidence, researcher reflexivity, and peer debriefing. In combination, these design elements and procedures

strengthened my arguments and provided an example of how to leverage different lenses and research paradigms to promote trustworthiness in educational research.

Table 5.5

Procedures Used to Increase Study Trustworthiness

Paradigm assumption/Lens	Postpositivist or Systematic Paradigm	Constructivist Paradigm	Critical Paradigm
Lens of the Researcher	Triangulation	Disconfirming evidence	Researcher reflexivity
Lens of Study Participants	Member checking	Prolonged engagement[a]	Collaboration[b]
Lens of People External to Study (Reviewers, Readers)	The audit trail	Thick, rich description[a]	Peer debriefing

Note. The shaded procedures were employed in the dissertation. Procedures to support trustworthiness are classified by research paradigm and perspective. This table is based on Cresswell & Miller's (2000) matrix.

[a] Prolonged engagement and thick description could potentially be facilitated with a longitudinal design.

[b] Collaboration could be achieved if participants are involved in the research design and through iterative re-thinking of intervention components.

This study employed a particular set of journal prompts (see Appendix M), which were to be administered weekly. Other research has examined separate types of prompts. For example, Terry and Doolittle (2008) had students monitor their time management behaviors. Some journaling interventions have involved daily instead of weekly entries (Arsal, 2010; Dörrenbächer & Perels, 2016; Schmitz & Wiese, 2006; Terry & Doolittle, 2008). Future

research could compare the effectiveness of different approaches and frequencies of metacognitive monitoring.

The result of the time series analysis for Carmen and Bruna provided evidence in support of tracking SRL in a situation-specific and longitudinal way. The students exhibited different profiles for the frequency and variety of strategies they reportedly used. Likewise, each highlighted different strategies in different weeks. Tracking SRL with situation-specific measures promotes ecological validity (Schmitz & Wiese, 2006). By tracking SRL longitudinally, researchers can capture the variation in strategy use over time (Becker, 2013; Fung et al., 2019).

Finally, faculty with relatively high personal efficacy in some areas of SRL support can feel less confident in other contexts, such as when trying to support disengaged students. Perceived self-efficacy impacts the choices teachers make for academic activities (Bandura, 1997; Gibson & Dembo, 1984). If faculty feel uncertain about how to help disengaged students, are they more likely to alter or reduce their level of support when students do not reciprocate? Future research and professional learning opportunities should focus on approaches to supporting disengaged students. A *Chronicle of Higher Education* article recently highlighted that student disengagement is a widespread phenomenon affecting higher education (Glazier et al., 2022, May 11). Therefore, student disengagement is not just a problem for individual institutions. A wicked problem such as this could require cross-institutional collaboration and dialogue in support of policy and research.

Implications for Practice and Policy

Reflective journaling is a pathway to support SRL by encouraging students to self-monitor their learning. Journaling supports metacognition when students are prompted to relate

their use of strategies, as well as their challenges and successes in learning. Interventions to support metacognition have helped students to make better informed decisions about their learning strategies (Häfner et al., 2014; Nietfeld et al., 2006). Journaling also makes student thinking visible, which makes it easier for faculty to identify student learning needs and devise appropriate supports. Students have varying levels of capacity to self-regulate their learning (Antonelli et al., 2020; Pape et al., 2013; Schunk, 2001; Zimmerman, 2002). Therefore, faculty need to differentiate support for students based on their respective levels of self-regulation development (Pape et al., 2013; Schunk, 2001; Zimmerman, 2002). Programs to support first-year students and programs serving at-risk students can set guidelines and model practices that encourage faculty to both promote student self-monitoring and then use the results of self-monitoring to guide how they support students. Within the framework of academic freedom, university administration could encourage first-year programming to include student self-monitoring. In support of this expectation, faculty trainers could prioritize faculty development related to supporting student metacognition.

One of the journal prompts employed in this study asked students to describe their challenges with completing assignments. Students' challenges included factors external to the classroom, which provided faculty with insight into the personal lives of their students. In addition to prompting student self-monitoring, journaling can also align with institutional efforts to support diversity, equity, and inclusion. Hearing students' stories can potentially help faculty to practice perspective taking and generate a sense of empathy for their students (Warren, 2014).

Just as students possess varied levels of capacity for SRL, faculty have different levels of skill and experience with supporting SRL. The faculty participants in this intervention study demonstrated varied levels of experience with supporting first-year students and each attributed

value to different components of the intervention. Training on SRL gives faculty language and frameworks to consider SRL processes and components. Future faculty interventions can target different SRL processes and components. Although this intervention included discussion of task analysis, future interventions could include more models for how to scaffold SRL in assignments as well as more opportunities for faculty to discuss how to do so. Institutions could form learning communities (Bryk et al., 2015; Learning Forward, 2011) centered on trying and studying faculty approaches to supporting SRL. Collective participation is a critical component of professional learning (Desimone, 2009). Learning communities offer opportunities to build shared motivation and mental models related to specific practices (Angelo, 2001). A professional learning community focused on supporting SRL could incorporate opportunities to address faculty self-efficacy, such as when colleagues share examples and models, encourage each other, and work together to try out new practices. An implication for university administration is that setting up and maintaining a learning community requires leadership and resources.

Conclusion

An important milestone on the road to a college degree is successfully persisting beyond the first year. Using networked EST (Neal & Neal, 2013), I examined a variety of factors that influence student persistence, ranging from macrosystem level factors such as state funding for higher education, to students' immediate personal relationships. Student-faculty interaction (Kim & Sax, 2009) and SRL (Ning & Downing, 2010; Slanger et al., 2015; Tuckman, 2005) are important factors that connect to student achievement. The conceptual framework that guided this study (see Figure 1.2) indicated that students with high self-efficacy (Defreitas & Bravo, 2012), who can regulate their motivation (Slanger et al., 2015; Tuckman, 2005), employ metacognition (Thibodeaux et al., 2017), and employ strategies such as help-seeking

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(Zimmerman & Martinez-Pons, 1986, 1988, 1990), are more likely to achieve higher grades and persist beyond the first year of college. A needs assessment study identified that students at State University used some SRL strategies, such as structuring their learning environment, but the students did not provide evidence of planning their work. Faculty relatedly reported student difficulties with time management. To address these findings, the intervention design focused on helping faculty to support SRL. The intervention was situated in the College 101 program because faculty are ideally situated to support student SRL (Paris & Paris, 2001) and the College 101 program explicitly aims to support first-year students.

Following a training program, the faculty participants piloted a learning strategies module for students and a set of journal prompts designed to help students think in the language of strategies. For two students participating in the study, the journaling produced a picture of the specific SRL strategies they were reportedly using and revealed that they need more support to expand their repertoire of strategies. Faculty expressed a slightly higher degree of confidence to support SRL by the end of the intervention and collectively expressed intentions to use the student module and reflective journaling in the future. This study contributes evidence for the value of faculty engagement with student SRL and describes a specific intervention approach that helped faculty and students to focus on the process of student learning.

References

Acevedo-Gil, N. (2019). College-going facultad: Latinx students anticipating postsecondary institutional obstacles. *Journal of Latinos and Education, 18*(2), 107-125. https://doi.org/10.1080/15348431.2017.1371019

Allshouse, A. (2016). *Professional development in self-regulated learning (Doctoral dissertation).* https://doi.org/10.7282/T3VT1VCS

Almer, E. D., Jones, K., & Moeckel, C. L. (1998). The impact of one-minute papers on learning in an introductory accounting course. *Issues in Accounting Education, 13*(3), 485-497. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bsu&AN=969738&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Ambrosino, R., & Peel, J. (2011). Faculty development programs: Assessing the impact on instructional Practices, and student learning and motivation. *The Journal of Faculty Development, 25*(2), 33-38. https://eric.ed.gov/?id=EJ975185

Angelo, T. A. (2001). Doing faculty development as if we value learning most: Transformative guidelines from research to practice. *To Improve the Academy, 19*(1), 97-112. https://doi.org/10.1002/j.2334-4822.2001.tb00526.x

Antonelli, J., Jones, S. J., Burridge, A. B., & Hawkins, J. (2020). Understanding the self-regulated learning characteristics of first-generation college students. *Journal of College Student Development, 61*(1), 67-83. http://doi.org/10.1353/csd.2020.0004

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology, 38*(2), 113-125. https://doi.org/10.1006/jesp.2001.1491

179

Arsal, Z. (2010). The effects of diaries on self-regulation strategies of preservice science

    teachers. *International Journal of Environmental and Science Education, 5*(1), 85-103.

    https://doi.org/10.12973/ijese.2010.106

Artino Jr, A. R., Cleary, T. J., Dong, T., Hemmer, P. A., & Durning, S. J. (2014). Exploring

    clinical reasoning in novices: a self-regulated learning microanalytic assessment

    approach. *Medical Education, 48*(3), 280-291. https://doi.org/10.1111/medu.12303

Aspelmeier, J. E., Love, M. M., McGill, L. A., Elliott, A. N., & Pierce, T. W. (2012). Self-

    esteem, locus of control, college adjustment, and GPA among first- and continuing-

    generation students: A moderator model of generational status. *Research in Higher*

    Education, 53(7), 755-781. http://www.jstor.org/stable/41679547

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal*

    of College Student Development, 40(5), 518-529. https://psycnet.apa.org/record/1999-

    01418-006

Atherton, M. C. (2014). Academic preparedness of first-generation college students: Different

    perspectives. *Journal of College Student Development, 55*(8), 824-829.

    https://doi.org/10.1353/csd.2014.0081

Azevedo, R., & Cromley, J. G. (2004). Does training on self-regulated learning facilitate

    students' learning with hypermedia? *Journal of Educational Psychology, 96*(3), 523-535.

    https://doi.org/10.1037/0022-0663.96.3.523

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change.

    Psychological Review, 84(2), 191-215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*.

    Prentice-Hall.

Bandura, A. (1997). *Self-efficacy : the exercise of control*. W.H. Freeman.

Baranowski, T., & Stables, G. (2000). Process evaluations of the 5-a-Day projects. *Health Education & Behavior, 27*(2), 157-166. https://doi.org/10.1177/109019810002700202

Barnard-Brak, L., Paton, V. O., & Lan, W. Y. (2010). Self-regulation across time of first-generation online learners. *ALT-J Association for Learning Technology Journal, 18*(1), 61-70. https://doi.org/10.1080/09687761003657572

Bathgate, M. E., Aragón, O. R., Cavanagh, A. J., Frederick, J., & Graham, M. J. (2019). Supports: A key factor in faculty implementation of evidence-based teaching. *CBE - Life Sciences Education, 18*(2) http://doi.org/10.1187/cbe.17-12-0272

Becker, L. L. (2013). Self-regulated learning interventions in the introductory accounting course: An empirical study. *Issues in Accounting Education, 28*(3), 435-460. https://doi.org/10.2308/iace-50444

Beishuizen, J. (2008). Does a community of learners foster self-regulated learning? *Technology, Pedagogy and Education, 17*(3), 183-193. https://doi.org/10.1080/14759390802383769

Bell, C. V., & Pape, S. J. (2012). Scaffolding students' opportunities to learn mathematics through social interactions. *Mathematics Education Research Journal, 24*(4), 423-445. https://doi.org/10.1007/s13394-012-0048-1

Bembenutty, H. (2011). New directions for self-regulation of learning in postsecondary education. *New Directions for Teaching & Learning, 2011*(126), 117-124. https://doi.org/10.1002/tl.450

Berger, J. B., & Milem, J. F. (1999). The Role of student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education, 40*(6), 641-664. https://doi.org/10.1023/A:1018708813711

Berthold, K., Nuckles, M., & Renkl, A. (2007). Do learning protocols support learning strategies and outcomes? The role of cognitive and metacognitive prompts. *Learning and Instruction, 17*(5), 564-577. http://dx.doi.org/10.1016/j.learninstruc.2007.09.007

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78*(1), 246-263. https://doi.org/10.1111/j.1467-8624.2007.00995.x

Blunt, J. R., & Karpicke, J. D. (2014). Learning with retrieval-based concept mapping. *Journal of Educational Psychology, 106*(3), 849-858. http://dx.doi.org/10.1037/a0035934

Bosch-Rosa, C., Meissner, T., & Bosch-Domènech, A. (2017). Cognitive bubbles. *Experimental Economics : A Journal of the Economic Science Association, 21*(1), 132-153. https://doi.org/10.1007/s10683-017-9529-0

Brand, J. E., & Xie, Y. (2010). Who benefits most from college? Evidence for negative selection in heterogeneous economic returns to higher education. *American Sociological Review, 75*(2), 273-302. https://doi.org/10.1177/0003122410363567

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.

Brooks, J. E. (2015). The impact of family structure, relationships, and support on African American students' collegiate experiences. *Journal of Black Studies, 46*(8), 817-836. https://doi.org/10.1177/0021934715609914

Brown, P. C., Roediger, H. L., & McDaniel, M. A. (2014). *Make it stick*. Harvard University Press.

Bryk, A. S., Gomez, L., Grunow, A., & LeMahieu, P. G. (2015). *How America's schools can get better at getting better*. Harvard Education Press.

Cabrera, D., & Cabrera, L. (2015). *Systems thinking made simple: New hope for solving wicked problems*. Plectica Publishing.

Callender, A. A., & McDaniel, M. A. (2009). The limited benefits of rereading educational texts. *Contemporary Educational Psychology, 34*(1), 30-41. https://doi.org/10.1016/j.cedpsych.2008.07.001

Cambridge-Williams, T., Winslers, A., Kitsantas's, A., & Bernard, E. (2013). University 100 orientation courses and living-learning communities boost academic retention and graduation via enhanced self-efficacy and self-regulated learning. *Journal of College Student Retention: Research, Theory and Practice, 15*(2), 243-268. https://doi.org/10.2190/CS.15.2.f

Carey, R. L. (2018). "What am I gonna be losing?" School culture and the family-based college-going dilemmas of Black and Latino adolescent boys. *Education and Urban Society, 50*(3), 246-273. https://doi.org/10.1177/0013124517713112

Carpenter, S. K., Pashler, H., & Cepeda, N. J. (2009). Using tests to enhance 8th grade students' retention of U.S. history facts. *Applied Cognitive Psychology, 23*(6), 760-771. https://doi.org/10.1002/acp.1507

Cavazos, J., Johnson, M. B., Fielding, C., Cavazos, A. G., Castro, V., & Vela, L. (2010). A

    qualitative study of resilient Latina/o college students. *Journal of Latinos and Education,*

    9(3), 172-188. https://doi.org/10.1080/15348431003761166

Charlesworth, T. E. S., & Banaji, M. R. (2019). Gender in science, technology, engineering, and

    mathematics: Issues, causes, solutions. *The Journal of Neuroscience : The Official*

    Journal of the Society for Neuroscience, 39(37), 7228-7243.

    https://doi.org/10.1523/JNEUROSCI.0475-18.2019

Chenail, R. J. (2011). Interviewing the investigator: Strategies for addressing instrumentation

    and researcher bias concerns in qualitative research. *The Qualitative Report, 16*(1), 255-

    262. http://nsuworks.nova.edu/tqr/vol16/iss1/16/

Chiou, C. (2008). The effect of concept mapping on students' learning achievements and

    interests. *Innovations in Education & Teaching International, 45*(4), 375-387.

    https://doi.org/10.1080/14703290802377240

Chira, I., Adams, M., & Thornton, B. (2008). Behavioral bias within the decision making

    process. *Journal of Business & Economics Research, 6*(8), 11-20.

    https://doi.org/10.19030/jber.v6i8.2456

Christie, C. A., Inkelas, M., & Lemire, S. (2017). *Improvement science in evaluation: Methods*

    and uses. Wiley & Sons.

Cleary, T. J. (2006). The development and validation of the Self-Regulation Strategy Inventory--

    Self-Report. *Journal of School Psychology, 44*(4), 307-322.

    https://doi.org/10.1016/j.jsp.2006.05.002

Cleary, T. J. (2018). *The Self-Regulated Learning Guide: Teaching Students to Think in the*

    Language of Strategies. Routledge.

Cleary, T. J., Velardi, B., & Schnaidman, B. (2017). Effects of the Self-Regulation

    Empowerment Program (SREP) on middle school students' strategic skills, self-efficacy,

    and mathematics achievement. *Journal of School Psychology, 64*, 28-42.

    https://doi.org/10.1016/j.jsp.2017.04.004

Cleary, T. J., & Zimmerman, B. J. (2004). Self-regulation empowerment program: A school-

    based program to enhance self-regulated and self-motivated cycles of student learning.

    Psychology in the Schools, 41(5), 537-550. https://doi.org/10.1002/pits.10177

Cleary, T. J., Dembitzer, L., & Kettler, R. J. (2015). Internal factor structure and convergent

    validity evidence: The self-report version of Self-Regulation Strategy Inventory.

    Psychology in the Schools, 52(9), 829-844. https://doi.org/10.1002/pits.21866

Cleary, T. J., Kitsantas, A., Peters-Burton, E., Lui, A., McLeod, K., Slemp, J., & Zhang, X.

    (2022). Professional development in self-regulated learning: Shifts and variations in

    teacher outcomes and approaches to implementation. *Teaching and Teacher Education,*

    111, 1-12. https://doi.org/10.1016/j.tate.2021.103619

Cobb, P., & Bowers, J. (1999). Cognitive and situated learning perspectives in theory and

    practice. *Educational Researcher, 28*(2), 4-15.

    https://doi.org/10.3102/0013189X028002004

Collier, P., & Morgan, D. (2008). "Is that paper really due today?": Differences in first-

    generation and traditional college students' understandings of faculty expectations.

    Higher Education (00181560), 55(4), 425-446. https://doi.org/10.1007/s10734-007-9065-

    5

Cook, S., Godiwalla, S., Brooks, K., Powers, C., & John, P. (2010). Recruitment and retention of study participants. In J. Wholey, H. Hatry & K. Newcomer (Eds.), *Handbook of practical program evaluation* (pp. 182-207). Jossey-Bass.

Cooksy, L. J., Godiwalla, S., Brooks, K., Powers, C., & John, P. (2001). The program logic model as an integrative framework for a multimethod evaluation. *Evaluation and Program Planning, 24*(2), 119-128. https://doi.org/10.1016/s0149-7189(01)00003-9

Cortina, J. M. (1993). What Is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98-104. https://doi.org/10.1037/0021-9010.78.1.98

Coryn, C. L. S., & Hobson, K. A. (2011). Using nonequivalent dependent variables to reduce internal validity threats in quasi-experiments: Rationale, history, and examples from practice. *New Directions for Evaluation, 2011*(131), 31-39. https://doi.org/10.1002/ev.375

Creasey, G., Jarvis, P., & Gadke, D. (2009). Student attachment stances, instructor immediacy, and student–instructor relationships as predictors of achievement expectancies in college students. *Journal of College Student Development, 50*(4), 353-372. https://doi.org/10.1353/csd.0.0082

Crenshaw, K. (2000). Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. In K. Crenshaw, J. James & T. Sharpley-Whiting (Eds.), *Black Feminist Reader* (pp. 208-238). Blackwell Publishers.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(3), 124-130. https://doi.org/10.1207/s15430421tip3903_2

Cresswell, J., & Plano-Clark, V. (2018). *Designing and conducting mixed methods research*. SAGE.

Dabbagh, N., & Kitsantas, A. (2005). Using web-based pedagogical tools as scaffolds for self-regulated learning. *Instructional Science: An International Journal of Learning and Cognition, 33*(5-6), 513-540. http://dx.doi.org/10.1007/s11251-005-1278-3

Dabbagh, N., & Kitsantas, A. (2009). Exploring how experienced online instructors report using integrative technologies to support self-regulated learning. *International Journal of Technology in Teaching & Learning, 5*(2), 154-168. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=eue&AN=52049151&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Daher, T. A., & Kiewra, K. A. (2016). An investigation of SOAR study strategies for learning from multiple online resources. *Contemporary Educational Psychology, 46*, 10-21. https://doi.org/10.1016/j.cedpsych.2015.12.004

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development.* Learning Policy Institute. https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report

DeAngelo, L., & Franke, R. (2016). Social mobility and reproduction for whom? College readiness and first-year retention. *American Educational Research Journal, 53*(6), 1588-1625. https://doi.org/10.3102/0002831216674805

DeFreitas, S. C., & Bravo, A., Jr. (2012). The influence of involvement with faculty and mentoring on the self-efficacy and academic achievement of African American and

Latino college students. *Journal of the Scholarship of Teaching and Learning, 12*(4), 1-11. https://eric.ed.gov/?id=EJ992123

Delaney, P. F., Verkoeijen, Peter P. J. L., & Spirgel, A. (2010). Spacing and testing effects: A deeply critical, lengthy, and at times discursive review of the literature. In B. H. Ross (Ed.), (pp. 63-147). Elsevier Academic Press. https://doi.org/10.1016/S0079-7421(10)53003-2

Delen, E., Liew, J., & Willson, V. (2014). Effects of interactivity and instructional scaffolding on learning: Self-regulation in online video-based environments. *Computers and Education, 78*, 312-320. https://doi.org/10.1016/j.compedu.2014.06.018

Dembo, M. H., & Seli, H. P. (2004). Students' resistance to change in learning strategies courses. *Journal of Developmental Education, 27*(3), 2-11. https://eric.ed.gov/?id=EJ718559

Denning, J. T. (2017). College on the cheap: Consequences of community college tuition reductions. *American Economic Journal. Economic Policy, 9*(2), 155-188. https://doi.org/10.1257/pol.20150374

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181-199. http://dx.doi.org/10.3102/0013189X08331140

Dignath-van Ewijk, C. (2016). What determines whether teachers enhance self-regulated learning? Predicting teachers' reported promotion of self-regulated learning by teacher beliefs, knowledge, and self-efficacy. *Frontline Learning Research, 4*(5), 83-105. https://doi.org/10.14786/flr.v4i5.247

Dörrenbächer, L., & Perels, F. (2016). More is more? Evaluation of interventions to foster self-regulated learning in college. *International Journal of Educational Research, 78*, 50-65. https://doi.org/10.1016/j.ijer.2016.05.010

Dryden, R. P., Perry, R. P., Hamm, J. M., Chipperfield, J. G., Clifton, R. A., Parker, P. C., & Krylova, M. V. (2021). An attribution-based motivation treatment to assist first-generation college students reframe academic setbacks. *Contemporary Educational Psychology, 64*, N.PAG. https://doi.org/10.1016/j.cedpsych.2020.101938

Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, 14*(1), 4-58. https://doi.org/10.1177/1529100612453266

Dusenbury, L., Brannigan, R., Falco, M., & Hansen, W. B. (2003). A review of research on fidelity of implementation: Implications for drug abuse prevention in school settings. *Health Education Research, 18*(2), 237-256. https://doi.org/10.1093/her/18.2.237

Dweck, C. S., Chi-yue Chiu, & Ying-yi Hong. (1995). Implicit theories: Elaboration and extension of the model. *Psychological Inquiry, 6*(4), 322. https://doi.org/10.1207/s15327965pli0604_12

Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science, 14*(3), 481-496.

Ehrenberg, R. G. (2012). American higher education in transition. *Journal of Economic Perspectives, 26*(1), 193-216. https://doi.org/10.1257/jep.26.1.193

Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report, 23*(11), 2850-2861. https://nsuworks.nova.edu/tqr/vol23/iss11/14

Espinosa, L. L., Turk, J. M., Taylor, M., & Chessman, H. M. (2019). *Race and ethnicity in higher education: A status report.* Washington, DC: American Council on Education.

Farmer, L. S. J., & Phamle, S. (2021). Transitioning to college: Impact of high school librarians. *The Journal of Academic Librarianship, 47*(1), 1-5. https://doi.org/10.1016/j.acalib.2020.102262

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). *Teaching adolescents to become learners. The role of noncognitive factors in shaping school performance: A critical literature review.* Chicago: University of Chicago Consortium on Chicago School Research.

Fink, A., Cahill, M. J., McDaniel, M. A., Hoffman, A., & Frey, R. F. (2018). Improving general chemistry performance through a growth mindset intervention: selective effects on underrepresented minorities. *Chemistry Education Research and Practice, 19*(3), 783-806. https://doi.org/10.1039/c7rp00244k

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *The American Psychologist, 34*(10), 906-911. https://doi.org/10.1037//0003-066X.34.10.906

Fleming, V. M. (2002). Improving students' exam performance by introducing study strategies and goal setting. *Teaching of Psychology, 29*(2), 115-119. https://doi.org/10.1207/S15328023TOP2902_07

Fung, C. Y., Abdullah, Melissa Ng Lee Yen, & Hashim, S. (2019). Improving self-regulated learning through personalized weekly e-Learning journals: A time series quasi-experimental study. *E-Journal of Business Education and Scholarship of Teaching, 13*(1), 30-45. https://eric.ed.gov/?id=EJ1239150

Gebbia, M. I., DeJesus, C. R., & Eckardt, P. (2019). Enhancing self-regulated Learning in underprepared students during the first year of college. *North American Journal of Psychology, 21*(2), 225-243. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=psyh&AN=2019-27109-001&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Gee, J. P. (2008). A sociocultural perspective on opportunity to learn. In P. A. Moss, D. C. Pullin, J. P. Gee, E. H. Haertel & L. J. Young (Eds.), *Assessment, Equity, and Opportunity to Learn* (pp. 77-108). Cambridge University Press.

Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology, 76*(4), 569-582. https://doi.org/10.1037/0022-0663.76.4.569

Gilley, D. P., Root, J. R., & Cox, S. K. (2021). Development of mathematics and self-determination skills for young adults with extensive support needs. *Journal of Special Education, 54*(4), 195-204. http://dx.doi.org/10.1177/0022466920902768

Glazier, R. A., Wilson-Bates, T., Croyle, K., Isaacs, E., Hernandez, E., & Green, N. (2022, May 11). *Chronicle of Higher Education*. https://www.chronicle.com/article/how-to-solve-the-student-disengagement-crisis

Graham, S. (2020). An attributional theory of motivation. *Contemporary Educational Psychology, 61*, 1-11. https://doi.org/10.1016/j.cedpsych.2020.101861

Grawe, N. D. (2018). *Demographics and the demand for higher education*. Johns Hopkins University Press.

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology, 29*(2), 75-91. https://www.jstor.org/stable/30219811

Gustavson, D. E., & Miyake, A. (2017). Academic procrastination and goal accomplishment: A

    combined experimental and individual differences investigation. *Learning & Individual*

    Differences, 54, 160-172. https://doi.org/10.1016/j.lindif.2017.01.010

Gusterson, H. (2017). Homework: Toward a critical ethnography of the university. *American*

    Ethnologist, 44(3), 435-450. https://doi.org/10.1111/amet.12520

Guvenc, H. (2010). The effects of cooperative learning and learning journals on teacher

    candidates' self-regulated learning. *Educational Sciences: Theory and Practice, 10*(3),

    1477-1487. https://eric.ed.gov/?id=EJ919859

Häfner, A., Oberst, V., & Stock, A. (2014). Avoiding procrastination through time management:

    An experimental intervention study. *Educational Studies, 40*(3), 352-360.

    https://doi.org/10.1080/03055698.2014.899487

Hall, N. C., Perry, R. P., Goetz, T., Ruthig, J. C., Stupnisky, R. H., & Newall, N. E. (2007).

    Attributional retraining and elaborative learning: Improving academic development

    through writing-based interventions. *Learning and Individual Differences, 17*(3), 280-

    290. http://dx.doi.org/10.1016/j.lindif.2007.04.002

Haller, E. P., & Others, A. (1988). Can comprehension be taught? A quantitative synthesis of

    "metacognitive" studies. *Educational Researcher, 17*(9), 5-8.

    https://www.jstor.org/stable/1175040

Hamm, J., Perry, R., Chipperfield, J., Murayama, K., & Weiner, B. (2017). Attribution-based

    motivation treatment efficacy in an online learning environment for students who differ

    in cognitive elaboration. *Motivation & Emotion, 41*(5), 600-616.

    https://doi.org/10.1007/s11031-017-9632-8

Haraway, D. J., & Haraway, D. J. (1991). A cyborg manifesto: science, technology, and

    socialist-feminism in the late twentieth century. *Simians, Cyborgs, & Women: The*

    Reinvention of Nature., , 149-181.

    https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=fmh&AN=

    MRB-WRI0251531&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Hartwig, M. K., Was, C. A., Isaacson, R. M., & Dunlosky, J. (2012). General knowledge

    monitoring as a predictor of in-class exam performance. *British Journal of Educational*

    Psychology, 82(3), 456-468. https://doi.org/10.1111/j.2044-8279.2011.02038.x

Hattie, J., & Biggs, J. (1996). Effects of learning skills interventions on student learning: A meta-

    analysis. *Review of Educational Research, 66*(2), 99.

    https://doi.org/10.3102/00346543066002099

Haveman, R., & Smeeding, T. (2006). The role of higher education in social mobility. *Future of*

    Children, 16(2), 125-150. https://doi.org/10.1353/foc.2006.0015

Higher Education Finance Commission. (2014). *Report to the general court of Massachusetts.* ().

Hofer, B. K., & Yu, S. L. (2003). Teaching self-regulated learning through a 'learning to learn'

    course. *Teaching of Psychology, 30*(1), 30-33.

    https://doi.org/10.1207/S15328023TOP3001_05

Hoppe, E. I., & Kusterer, D. J. (2011). Behavioral biases and cognitive reflection. *Economics*

    Letters, 110(2), 97-100. https://doi.org/10.1016/j.econlet.2010.11.015

Hout, M. (2012). Social and economic returns to college education in the United States. *Annual*

    Review of Sociology, 38(1), 379-400. https://doi.org/10.1146/annurev.soc.012809.102503

Howell, A. J., & Watson, D. C. (2007). Procrastination: Associations with achievement goal orientation and learning strategies. *Personality and Individual Differences, 43*(1), 167-178. https://doi.org/10.1016/j.paid.2006.11.017

Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M., Mann, F. B., Barmer, A., Dilig, R., & Nachazel, T. (2020). *The Condition of Education 2020.* ().National Center for Education Statistics. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020144

Isaacson, R. M., & Fujita, F. (2006). Metacognitive Knowledge Monitoring and Self-Regulated Learning: Academic Success and Reflections on Learning. *Journal of Scholarship of Teaching and Learning, 6*(1), 39-55. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=eric&AN=EJ854910&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *Journal of Higher Education, 77*(5), 861-885. https://doi.org/10.1353/jhe.2006.0042

Ishitani, T. T., & Reid, A. M. (2015). First-to-second-year persistence profile of commuter students. *New Directions for Student Services, 2015*(150), 13-26. https://doi.org/10.1002/ss.20123

Jack, A. A. (2016). (No) harm in asking: Class, acquired cultural capital, and academic engagement at an elite university. *Sociology of Education, 89*(1), 1-19. https://doi.org/10.1177/0038040715614913

Jado, S. M. A. (2015). The effect of using learning journals on developing self-regulated learning and reflective thinking among pre-service teachers in Jordan. *Journal of Education and Practice, 6*(5), 89-103. https://eric.ed.gov/?id=EJ1083603

Järvelä, S., & Renninger, K. A. (2006). Designing for learning: Interest, motivation, and engagement. In R. K. Sawyer (Ed.), *The Cambridge Handbook of the Learning Sciences* (pp. 668-685). Cambridge University Press.

Järvenoja, H., Järvelä, S., & Malmberg, J. (2015). Understanding regulated learning in situative and contextual frameworks. *Educational Psychologist, 50*(3), 204-219. https://doi.org/10.1080/00461520.2015.1075400

JohnBull, R. M., Hardiman, M., & Rinne, L. (2013). Professional development effects on teacher efficacy: Exploring how knowledge of neuro- and cognitive sciences changes beliefs and practices. Paper presented at the *American Educational Research Association.*

Johnson, A., Azevedo, R., & D'Mello, S. (2011). The temporal and dynamic nature of self-regulatory processes during independent and externally assisted hypermedia learning. *Cognition and Instruction, 29*(4), 471-504. https://doi.org/10.1080/07370008.2011.610244

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112-133. https://doi.org/10.1177/1558689806298224

Karpicke, J. D., Butler, A. C., & Roediger III, H. L. (2009). Metacognitive strategies in student learning: Do students practise retrieval when they study on their own? *Memory, 17*(4), 471-479. https://doi.org/10.1080/09658210802647009

Kilday, J. E., Lenser, M. L., & Miller, A. D. (2016). Considering students in teachers' self-efficacy: Examination of a scale for student-oriented teaching. *Teaching and Teacher Education, 56*, 61-71. https://doi.org/10.1016/j.tate.2016.01.025

Kim, Y., & Sax, L. (2009). Student–faculty interaction in research universities: Differences by student gender, race, social class, and first-generation status. *Research in Higher Education, 50*(5), 437-459. https://doi.org/10.1007/s11162-009-9127-x

Kitsantas, A., & Zimmerman, B. J. (2006). Enhancing self-regulation of practice: the influence of graphing and self-evaluative standards. *Metacognition and Learning, 1*, 201-212. https://doi.org/10.1007/s11409-006-9000-7

Klein, J. D., & Freitag, E. T. (1992). Training students to utilize self-motivational strategies. *Educational Technology, 32*(3), 44-48. https://www.jstor.org/stable/44425605

Knapp, H. (2018). Chapter 11: Correlation and Regression: Pearson and Spearman. *Intermediate Statistics Using SPSS®* (pp. 276-307). SAGE.

Knight, M. G., Norton, N. E. L., Bentley, C. C., & Dixon, I. R. (2004). The power of Black and Latina/o counterstories: Urban families and college-going processes. *Anthropology & Education Quarterly, 35*(1), 99-120. https://doi.org/10.1525/aeq.2004.35.1.99

Kornell, N., & Bjork, R. A. (2008). Learning concepts and categories: Is spacing the "enemy of induction"? *Psychological Science (0956-7976), 19*(6), 585-592. https://doi.org/10.1111/j.1467-9280.2008.02127.x

Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *The American Journal of Occupational Therapy, 45*, 214-222. https://doi.org/10.5014/ajot.45.3.214

Krumrei-Mancuso, E., Newton, F. B., Kim, E., & Wilcox, D. (2013). Psychosocial factors
    predicting first-year college student success. *Journal of College Student Development,
    54*(3), 247-266. https://doi.org/10.1353/csd.2013.0028

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects
    of student engagement on first-year college grades and persistence. *Journal of Higher
    Education, 79*(5), 540-563. https://doi.org/10.1080/00221546.2008.11772116

Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. University of California
    Press.

Learning Forward. (2011). *Standards for professional learning*. Author.

Leviton, L. C., & Lipsey, M. W. (2007). A big chapter about small theories: Theory as method:
    Small theories of treatments. *New Directions for Evaluation, 2007*(114), 27-62.
    https://doi.org/10.1002/ev.224

Light, G., Calkins, S., Luna, M., & Drane, D. (2009). Assessing the impact of a year-long faculty
    development program on faculty approaches to teaching. *International Journal of
    Teaching and Learning in Higher Education, 20*(2), 168-181.
    https://eric.ed.gov/?id=EJ864334

Lim, L., & Renshaw, P. (2001). The relevance of sociocultural theory to culturally diverse
    partnerships and communities. *Journal of Child and Family Studies, 10*(1), 9-21.
    https://doi.org/10.1023/A:1016625432567

Lochmiller, C. R., & Lester, J. N. (2017). *An introduction to educational research: Connecting
    methods to practice*. Sage.

Lohfink, M. M., & Paulsen, M. B. (2005). Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development, 46*(4), 409-428. https://doi.org/10.1353/csd.2005.0040

Longwell-Grice, R., & Longwell-Grice, H. (2008). Testing Tinto: How do retention theories work for first-generation, working-class students? *Journal of College Student Retention: Research, Theory & Practice, 9*(4), 407-422. https://doi.org/10.2190/CS.9.4.a

Macakova, V., & Wood, C. (2020). The relationship between academic achievement, self-efficacy, implicit theories and basic psychological needs satisfaction among university students. *Studies in Higher Education, ahead-of-print*(ahead-of-print), 1-11. https://doi.org/10.1080/03075079.2020.1739017

Marrun, N. A. (2020). "My mom seems to have a dicho for everything!": Family engagement in the college success of Latina/o students. *Journal of Latinos and Education, 19*(2), 164-180. https://doi.org/10.1080/15348431.2018.1489811

Massachusetts Department of Education. (2019). *Spring 2019: Student success and completion.* https://www.mass.edu/datacenter/pmrs/reports/2019/Success-Completion.asp

McCabe, J. (2010). Metacognitive awareness of learning strategies in undergraduates. *Memory & Cognition, 39*(3), 462-476. https://doi.org/10.3758/s13421-010-0035-2

McCabe, J. A., Kane-Gerard, S., & Friedman-Wheeler, D. (2020). Examining the utility of growth-mindset interventions in undergraduates: A longitudinal study of retention and academic success in a first-year cohort. *Translational Issues in Psychological Science, 6*(2), 132-146. https://doi.org/10.1037/tps0000228

McCallen, L. S., & Johnson, H. L. (2019). The role of institutional agents in promoting higher education success among first-generation college students at a public urban university.

Journal of Diversity in Higher Education, 13(4), 320–332.

https://doi.org//10.1037/dhe0000143

McDade, L. A. (1988). Knowing the "right stuff": Attrition, gender, and scientific literacy.

Anthropology & Education Quarterly, 19(2), 93-114.

https://doi.org/10.1525/aeq.1988.19.2.05x1802h

McGuire, S. Y. (2018). *Teach yourself how to learn: Strategies you can use to ace any course at*

any level. Stylus Publishing.

McLaughlin, J., & Jordan, G. (2010). Using logic models. In J. Wholey, H. Hatry & K.

Newcomer (Eds.), *Handbook of practical program evaluation* (pp. 55-80). Jossey-Bass.

McShannon, J., & Hynes, P. (2005). Student achievement and retention: Can professional

development programs help faculty GRASP it? *Journal of Faculty Development, 20*(2),

87-94.

https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=eric&AN=

EJ719973&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

http://www.newforums.com

Mertens, D. M. (2018). *Mixed methods designs in evaluation*. SAGE.

Mezick, E. M. (2007). Return on investment: Libraries and student retention. *Journal of*

Academic Librarianship, 33(5), 561-566. http://dx.doi.org/10.1016/j.acalib.2007.05.002

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis*. SAGE.

Millea, M., Wills, R., Elder, A., & Molina, D. (2018). What matters in college student success?

Determinants of college retention and graduation rates. *Education, 138*(4), 309-322.

https://eric.ed.gov/?id=EJ1180297

Miller, D. I., & Wai, J. (2015). The bachelor's to PhD STEM pipeline no longer leaks more women than men: A 30-year analysis. *Frontiers in Psychology, 6*(37). https://doi.org/10.3389/fpsyg.2015.00037

Milner, H. R. (2007). Race, culture, and researcher positionality: Working through dangers seen, unseen, and unforeseen. *Educational Researcher, 36*(7), 388-400. https://doi.org/10.3102/0013189X07309471

Mitchell, M., Leachman, M., & Masterson, K. (2017). *A lost decade in higher education funding state cuts have driven up tuition and reduced quality.* Center on Budget and Policy Priorities. https://vtechworks.lib.vt.edu/bitstream/handle/10919/83618/TuitionReducedQuality.pdf?sequence=1&isAllowed=y

Morales, E. E. (2012). Navigating new worlds: A real-time look at how successful and non-successful first-generation college students negotiate their first semesters. *International Journal of Higher Education, 1*(1), 90-101. https://doi.org/10.5430/ijhe.v1n1p90

National Student Clearinghouse Research Center. (2020). *First-year persistence and retention 2018 beginning cohort*. National Student Clearinghouse. https://nscresearchcenter.org/persistence-retention/

Neal, J. W., & Neal, Z. P. (2013). Nested or networked? Future directions for ecological systems theory. *Social Development, 22*(4), 722-737. https://doi.org/10.1111/sode.12018

Nietfeld, J. L., Cao, L., & Osborne, J. W. (2006). The effect of distributed monitoring exercises and feedback on performance, monitoring accuracy, and self-efficacy. *Metacognition and Learning, 1*(2), 159-179. https://doi.org/10.1007/s10409-006-9595-6

Nietfeld, J. L., & Schraw, G. (2002). The effect of knowledge and strategy training on

    monitoring accuracy. *Journal of Educational Research, 95*(3), 131-142.

    https://doi.org/10.1080/00220670209596583

Ning, H. K., & Downing, K. (2010). The reciprocal relationship between motivation and self-

    regulation: A longitudinal study on academic performance. *Learning and Individual*

    Differences, 20(6), 682-686. https://doi.org/10.1016/j.lindif.2010.09.010

Office of Institutional Research. (n.d.). *Retention rates of first-time, full-time, student cohorts.*

O'Keefe, P. A., Dweck, C. S., & Walton, G. M. (2018). Implicit theories of interest: Finding your

    passion or developing it?. *Psychological Science, 29*(10), 1653-1664.

Oliff, P., Palacios, V., Johnson, I., & Leachman, M. (2013). *Recent deep state higher education*

    cuts may harm students and the economy for years to come. Washington, DC: Center on

    Budget and Policy Priorities. https://www.cbpp.org/research/recent-deep-state-higher-

    education-cuts-may-harm-students-and-the-economy-for-years-to

Ong, M., Jaumot-Pascual, N., & Ko, L. T. (2020). Research literature on women of color in

    undergraduate engineering education: A systematic thematic synthesis. *Journal of*

    Engineering Education, 109(3), 581-615. https://doi.org/10.1002/jee.20345

Onwuegbuzie, A. J., & Leech, N. L. (2006). Linking research questions to mixed methods data

    analysis procedures. *The Qualitative Report, 11*(3), 474-498.

    https://nsuworks.nova.edu/tqr/vol11/iss3/3/

Palomin, L. (2020). The missing piece in higher education: Latina/o/x parent involvement in the

    pre-college preparation process from the South Texas border region. *International*

    Journal of Qualitative Studies in Education, 33(8), 887-897.

    https://doi.org/10.1080/09518398.2020.1783468

Pape, S. J., & Wang, C. (2003). Middle school children's strategic behavior: Classification and

    relation to academic achievement and mathematical problem solving. *Instructional*

    Science, 31(6), 419-449. https://doi.org/10.1023/A:1025710707285

Pape, S. J., Bell, C. V., & Yetkin-Özdemir, I. E. (2013). Sequencing components of mathematics

    lessons to maximize development of self-regulation: Theory, practice, and intervention.

    In H. Bembenutty, T. J. Cleary & A. Kitsantas (Eds.), *Applications of self-regulated*

    learning across diverse disciplines: A tribute to Barry J. Zimmerman (pp. 29-58).

    Information Age Publishing.

Paris, S. G., & Paris, A. H. (2001). Classroom applications of research on self-regulated learning.

    Educational Psychologist, 36(2), 89-101. https://doi.org/10.1207/S15326985EP3602_4

Park, S. W., & Sperling, R. A. (2012). Academic procrastinators and their self-regulation.

    Psychology, 3(1), 12-23. https://doi.org/10.4236/psych.2012.31003

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation

    college students: Additional evidence on college experiences and outcomes. *Journal of*

    Higher Education, 75(3), 249-284. https://doi.org/10.1080/00221546.2004.11772256

Perez, A. M., McShannon, J., & Hynes, P. (2012). Community college faculty development

    program and student achievement. *Community College Journal of Research and Practice,*

    36(5), 379-385. https://doi.org/10.1080/10668920902813469

Phillips, D. C. (2018). The many functions of evaluation in education. *Education Policy Analysis*

    Archives, 26, 1-18. https://doi.org/10.14507/epaa.26.3811

Pope, D. C. (2017). *Denise Clark Pope: Increasing validity in qualitative research [Video]*.

    https://doi.org/10.4135/9781473991828

Pressley, M., & Harris, K. R. (2006). Cognitive strategies instruction: From basic research to

    classroom instruction. *Journal of Education, 189*(1), 77-94.

    https://www.jstor.org/stable/42748661

Próspero, M., & Vohra-Gupta, S. (2007). First generation college students: Motivation,

    integration, and academic achievement. *Community College Journal of Research and*

    Practice, 31(12), 963-975. https://doi.org/10.1080/10668920600902051

Ramos-Sánchez, L., & Nichols, L. (2007). Self efficacy of first-generation and non-first-

    generation college students: The relationship with academic performance and college

    adjustment. *Journal of College Counseling, 10*(1), 6-18. https://doi.org/10.1002/j.2161-

    1882.2007.tb00002.x

Rodriguez, A. J. (1998). Strategies for counterresistance: Toward sociotransformative

    constructivism and learning to teach science for diversity and for understanding. *Journal*

    of Research in Science Teaching, 35(6), 589-622. https://doi.org//10.1002/(SICI)1098-

    2736(199808)35:6%3C589::AID-TEA2%3E3.0.CO;2-I

Roediger, H. L., & Pyc, M. A. (2012). Applying cognitive psychology to education:

    Complexities and prospects. *Journal of Applied Research in Memory and Cognition,*

    1(4), 263-265. https://doi.org/10.1016/j.jarmac.2012.10.006

Rohlwing, R. L., & Spelman, M. (2014). Characteristics of adult learning: Implications for the

    design and implementation of professional learning programs. In L. E. Martin, S. Kragler,

    D. J. Quatroche & K. L. Bauserman (Eds.), *Handbook for professional development in*

    education: Successful models and practices, PreK-12 (pp. 231-245). Guilford Press.

Rossow, I., Storvoll, E. E., Baklien, B., & Pape, H. (2011). Effect and process evaluation of a

    Norwegian community prevention project targeting alcohol use and related harm.

Contemporary Drug Problems, 38(3), 441-466.

https://doi.org/10.1177/009145091103800306

Ruffalo Noel-Levitz. (2020). *2020 National freshman motivation to complete college report.* ().

https://www.ruffalonl.com/papers-research-higher-education-fundraising/2020-national-

freshman-motivation-to-complete-college-report/

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic

motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

https://doi.org/10.1037/0003-066X.55.1.68

Sadowski, C., Stewart, M., & Pediaditis, M. (2018). Pathway to success: Using students' insights

and perspectives to improve retention and success for university students from low

socioeconomic (LSE) backgrounds. *International Journal of Inclusive Education, 22*(2),

158-175. https://doi.org/10.1080/13603116.2017.1362048

Schmitz, B., & Wiese, B. S. (2006). New perspectives for the evaluation of training sessions in

self-regulated learning: Time-series analyses of diary data. *Contemporary Educational

Psychology, 31*(1), 64-96. https://doi.org/10.1016/j.cedpsych.2005.02.002

Schunk, D. H. (2001). Social cognitive theory and self-regulated learning. In B. J. Zimmerman,

& D. H. Schunk (Eds.), *Self-Regulated Learning and Academic Achievement* (pp. 125-

152). Routledge.

Serra, M., & DeMarree, K. (2016). Unskilled and unaware in the classroom: College students'

desired grades predict their biased grade predictions. *Memory & Cognition, 44*(7), 1127-

1137. https://doi.org/10.3758/s13421-016-0624-9

Shadish, W., Cook, T., & Campbell, D. (2002). *Experimental and quasi-experimental designs for

generalized causal inference*. Wadsworth, Cengage Publishing.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63-75. https://doi.org/10.3233/EFI-2004-22201

Sidelinger, R. (2010). College student involvement: An examination of student characteristics and perceived instructor communication behaviors in the classroom. *Communication Studies, 61*(1), 87-103. https://doi.org/10.1080/10510970903400311

Sisk, V. F., Burgoyne, A. P., Sun, J., Butler, J. L., & Macnamara, B. N. (2018). To what extent and under which circumstances are growth mind-sets important to academic achievement? Two meta-analyses. *Psychological Science, 29*(4), 549-571. https://doi.org/10.1177/0956797617739704

Slanger, W. D., Berg, E. A., Fisk, P. S., & Hanson, M. G. (2015). A longitudinal cohort study of student motivational factors related to academic success and retention using the College Student Inventory. *Journal of College Student Retention: Research, Theory & Practice, 17*(3), 278-302. https://doi.org/10.1177/1521025115575701

Smith, D. B., & Gadbury-Amyot, C. C. (2014). Process evaluation of a teaching and learning centre at a research university. *Assessment and Evaluation in Higher Education, 39*(4), 427-442. https://doi.org/10.1080/02602938.2013.845646

Soria, K. M., Weiner, B., & Lu, E. C. (2014). Financial decisions among undergraduate students from low-income and working-class social class backgrounds. *Journal of Student Financial Aid, 44*(1), 1-22. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=eue&AN=97431717&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Soria, K. M., Nackerud, S., & Peterson, K. (2015). Socioeconomic indicators associated with first-year college students' use of academic libraries. *The Journal of Academic Librarianship, 41*(5), 636-643. https://doi.org/10.1016/j.acalib.2015.06.011

Spruce, R., & Bol, L. (2015). Teacher beliefs, knowledge, and practice of self-regulated learning. *Metacognition and Learning, 10*(2), 245-277. https://doi.org/10.1007/s11409-014-9124-0

Stufflebeam, D. L. (2003). The CIPP model for evaluation. In D. L. Stufflebeam, & T. Kellaghan (Eds.), *The international handbook of evaluation* (pp. 31-61). Kluwer Academic Publishers.

Stupnisky, R. H., Stewart, T. L., Daniels, L. M., & Perry, R. P. (2011). When do students ask why? Examining the precursors and outcomes of causal search among first-year college students. *Contemporary Educational Psychology, 36*(3), 201-211. https://doi.org/10.1016/j.cedpsych.2010.06.004

Sun, J. C., & Chen, A. Y. (2016). Effects of integrating dynamic concept maps with Interactive Response System on elementary school students' motivation and learning outcome: The case of anti-phishing education. *Computers & Education, 102*, 117-127. https://doi.org/10.1016/j.compedu.2016.08.002

Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. In A. Tashakkori, & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 3-50). SAGE.

Tello, A. M., & Lonn, M. R. (2017). The role of high school and college counselors in supporting the psychosocial and emotional needs of Latinx first-generation college students. *Professional Counselor, 7*(4), 349-359. https://doi.org/10.15241/amt.7.4.349

Terry, K. P., & Doolittle, P. E. (2008). Fostering self-efficacy through time management in an online learning environment. *Journal of Interactive Online Learning, 7*(3), 195-207. http://www.ncolr.org/jiol/issues/pdf/7.3.3.pdf

Thibodeaux, J., Deutsch, A., Kitsantas, A., & Winsler, A. (2017). First-year college students' time use: Relations with self-regulation and GPA. *Journal of Advanced Academics, 28*(1), 5-27. https://doi.org/x.doi.org/10.1177/1932202X16676860

Tinto, V. (1988). Stages of student departure: Reflections on the longitudinal character of student leaving. *Journal of Higher Education, 59*(4), 438-455. https://doi.org/10.1080/00221546.1988.11780199

Trolian, T. L., Jach, E. A., Hanson, J. M., & Pascarella, E. T. (2016). Influencing academic motivation: The effects of student-faculty interaction. *Journal of College Student Development, 57*(7), 810. https://doi.org/10.1353/csd.2016.0080

Tschannen-Moran & Chen, J. A. (2014). Focusing attention on beliefs about capability and knowledge in teachers' professional development. In L. E. Martin, S. Kragler, D. J. Quatroche & K. L. Bauserman (Eds.), *Handbook for professional development in education: Successful models and practices, PreK-12* (pp. 231-245). Guilford Press.

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*(7), 783-805. https://doi.org/10.1016/S0742-051X(01)00036-1

Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Four professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *Elementary School Journal, 110*(2), 228-245. http://dx.doi.org/10.1086/605771

Tuckman, B. W. (1991). The development and concurrent validity of the procrastination scale. *Educational & Psychological Measurement, 51*(2), 473-480. https://doi.org/10.1177/0013164491512022

Tuckman, B. W. (2007). The effect of motivational scaffolding on procrastinators' distance learning outcomes. *Computers and Education, 49*(2), 414-422. https://doi.org/10.1016/j.compedu.2005.10.002

Tuckman, B. W. (2003). The effect of learning and motivation strategies training on college students' achievement. *Journal of College Student Development, 44*(3), 430-437. https://doi.org/10.1353/csd.2003.0034

Tuckman, B. W. (2005). Relations of academic procrastination, rationalizations, and performance in a web course with deadlines. *Psychological Reports, 96*(3), 1015-1021. https://doi.org/10.2466/pr0.96.3c.1015-1021

Tuckman, B. W., & Sexton, T. L. (1990). The relation between self-beliefs and self-regulated performance. *Journal of Social Behavior and Personality, 5*(5), 465-472. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=psyh&AN=1991-04477-001&site=ehost-live&scope=site&authtype=ip,shib&custid=s3555202

Van Overwalle, F., & de Metsenaere, M. (1990). The effects of attribution-based intervention and study strategy training on academic achievement in college freshmen. *British Journal of Educational Psychology, 60*(3), 299-311. https://doi.org/10.1111/j.2044-8279.1990.tb00946.x

Vetter, M. K., Schreiner, L. A., & Jaworski, B. (2019). Faculty attitudes and behaviors that contribute to thriving in first-year students of color. *Journal of the First-Year Experience & Students in Transition, 31*(1), 9-28. https://eric.ed.gov/?id=EJ1211863

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Wang, C., Cavanagh, A. J., Bauer, M., Reeves, P. M., Gill, J. C., Chen, X., Hanauer, D. I., & Graham, M. J. (2021). A framework of college student buy-in to evidence-based teaching practices in STEM: The roles of trust and growth mindset. *CBE Life Sciences Education, 20*(4), 1-10. https://doi.org/10.1187/cbe.20-08-0185

Wang, J., & Xing, Q. (2019). Metacognitive illusion in category learning: Contributions of processing fluency and beliefs. *Advances in Cognitive Psychology, 15*(2), 100. https://doi.org/10.5709/acp-0260-3

Warren, C. A. (2014). Towards a pedagogy for the application of empathy in culturally diverse classrooms. *The Urban Review, 46*(3), 395–419. https://doi.org/10.1007/s11256-013-0262-5

Weinstein, C. E., Acee, T. W., & Jung, J. (2011). Self-regulation and learning strategies. *New Directions for Teaching & Learning, 2011*(126), 45-53. https://doi.org/10.1002/tl.443

Wells, J. C., Sheehey, P. H., & Sheehey, M. (2017). Using self-monitoring of performance with self-graphing to increase academic productivity in math. *Beyond Behavior, 26*(2), 57-65. https://doi.org/10.1177/1074295617711207

Wibrowski, C. R., Matthews, W. K., & Kitsantas, A. (2017). The role of a skills learning support program on first-generation college students' self-regulation, motivation, and academic achievement: A longitudinal study. *Journal of College Student Retention: Research, Theory and Practice, 19*(3), 317-332. https://doi.org/10.1177/1521025116629152

Williams, P. E., & Hellman, C. M. (2004). Differences in self-regulation for online learning between first- and second-generation college students. *Research in Higher Education, 45*(1), 71-82. https://doi.org/10.1023/B:RIHE.0000010047.46814.78

Winkle-Wagner, R., Forbes, J. M., Rogers, S., & Reavis, T. B. (2020). A culture of success: Black alumnae discussions of the assets-based approach at Spelman College. *The Journal of Higher Education (Columbus), 91*(5), 653-673. https://doi.org/10.1080/00221546.2019.1654965

Wolters, C. A., & Benzon, M. B. (2013). Assessing and predicting college students' use of strategies for the self-regulation of motivation. *The Journal of Experimental Education, 81*(2), 199-221. https://doi.org/10.1080/00220973.2012.699901

Yang, Y. (2008). Social Inequalities in Happiness in the United States, 1972 to 2004: An Age-Period-Cohort Analysis. *American Sociological Review, 73*(2), 204-226. https://doi.org/10.1177/000312240807300202

Yeager, D. S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., Hessert, W. T., Williams, M. E., & Cohen, G. L. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General, 143*(2), 804-824. https://doi.org/10.1037/a0033906

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice, 41*(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*(3), 329-339. https://doi.org/10.1037/0022-0663.81.3.329

Zimmerman, B. J., & Kitsantas, A. (2002). Acquiring writing revision and self-regulatory skill through observation and emulation. *Journal of Educational Psychology, 94*(4), 660-668. https://doi.org/10.1037/0022-0663.94.4.660

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal, 23*(4), 614-628. https://www.jstor.org/stable/1163093

Zimmerman, B. J., & Martinez-Pons, M. (1988). Construct validation of a strategy model of student self-regulated learning. *Journal of Educational Psychology, 80*(3), 284-290. https://doi.org/10.1037/0022-0663.80.3.284

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology, 82*(1), 51-59. https://doi.org/10.1037/0022-0663.82.1.51

Zimmerman, B. J., & Schunk, D. H. (2001). Reflections on Theories of Self-Regulated Learning and Academic Achievement. In B. J. Zimmerman, & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 289-307). Routledge.

Appendix A

Research Matrix for Needs Assessment Study

Research Questions (RQ) / Constructs	Instruments/Measures (Items)	Data Collection	Data Analysis
RQ 1: To what extent do students at State University report procrastination behaviors? What are the differences in procrastination behaviors across student subsamples?			
Student procrastination behaviors	Student survey (Appendix B)	Student survey in Qualtrics, mid-September, 2021	Descriptive statistics
	Tuckman Procrastination Scale (Q#7-22)		Thematic analysis
	Open question (Q#51)		
RQ 2: What are the study habits of first-year college students at State University?			
Student engagement with self-regulatory behaviors	Student survey (Appendix B)	Student survey in Qualtrics, mid-September, 2021	Descriptive statistics
	Self-Regulation Strategy Inventory-Self-Report (Q#23-50)	Faculty survey in Qualtrics, August, 2021	Thematic analysis
	Open question (Q#51)		
	Faculty survey (Q#16) (Appendix C)	Semi-structured one-hour interviews, August-September, 2021	
	Faculty interview protocol (Q#4-8) (Appendix D)		
RQ 3: To what extent do professors at State University coach first-year students on how to self-regulate their learning?			
Instruction of SRL strategies	Faculty interview protocol (Q#6, 7, 11) (Appendix D)	Semi-structured one-hour interviews, August-September, 2021	Thematic analysis
	Faculty survey (Q#17) (Appendix C)	Faculty survey in Qualtrics, August, 2021	
RQ 4: To what extent do professors at State University perceive that they create an environment that promotes the development of self-regulated learning?			

Learning environment supportive of SRL	Faculty survey (Appendix C)	Faculty survey in Qualtrics, August, 2021	Descriptive statistics
	Teacher's self-efficacy for student-oriented teaching (Q#4-15)		Thematic analysis
		Semi-structured one-hour interviews, August-September, 2021	
	Faculty interview protocol (Q#7-8, 10-11) (Appendix D)		

Appendix B

Student Survey

By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

The purpose of this research project is to understand how students regulate their learning and what role professors have in helping students to do so. Your responses are completely confidential and sharing honest answers to the following questions will help the researcher to devise a useful intervention to help students use strategies to be successful in college.

1. Are you at least 18 years old?
    a. Yes
    b. No

If answered "No", survey will end and student will be presented with this message:

Thanks for your interest. This research study has permission to include participants who are at

least 18 years old.

2. What is your age?
    a. 18-19
    b. 20-23
    c. 24-29
    d. 30-39
    e. 40-55
    f. Over 55

3. What is your current gender?
    a. Woman
    b. Man
    c. Transgender
    d. A gender not listed here
    e. Prefer not to say

4. How would you best describe yourself?
    a. American Indian or Alaskan Native
    b. Asian
    c. Black or African American
    d. Hispanic or Latinx
    e. Native Hawaiian and other Pacific Islander
    f. White
    g. Other (please specify)
    h. Prefer not to say

5. Has either of your parents earned a four-year college/university degree?
    a. Yes
    b. No
    c. Don't know

6. Did you receive a Federal Pell Grant as part of your financial aid package?
    a. Yes
    b. No
    c. Don't know

Questions 7-22 are on a four-point scale with anchors of 1 = That's me for sure and 4 = That's

not me for sure.

7. I needlessly delay finishing jobs, even when they're important.
8. I postpone starting in on things I don't like to do.
9. When I have a deadline, I wait till the last minute.
10. I delay making tough decisions.
11. I keep putting off improving my work habits.
12. I manage to find an excuse for not doing something.
13. I put the necessary time into even boring tasks, like studying.
14. I am an incurable time waster.
15. I'm a time waster now but I can't seem to do anything about it.
16. When something's too tough to tackle, I believe in postponing it.
17. I promise myself I'll do something and then drag my feet.
18. Whenever I make a plan of action, I follow it.
19. Even though I hate myself if I don't get started, it doesn't get me going.
20. I always finish important jobs with time to spare.

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21. I get stuck in neutral even though I know how important it is to get started.
22. Putting something off until tomorrow is not the way I do it.

Questions 23-50 are on a 5-point scale:

1 = Almost never 2 = Not very often 3 = Somewhat often 4 = Pretty often 5 = Almost always

23. I tell myself to keep trying hard when I get confused.
24. I give up or quit when I do not understand something.
25. I try to study in a quiet place.
26. I ask my teacher about the topics that will be on upcoming tests.
27. I use my class notes to study.
28. I study hard even when there are more fun things to do at home.
29. I quiz myself to see how much I am learning during studying.
30. I lose important dittos/worksheets that I need to study.
31. I make a schedule to help me organize my study time.
32. I use binders or folders to organize my study materials.
33. I think about the types of questions that might be on a test.
34. I think about how new concepts relate to things I already know.
35. I try to identify the format of upcoming tests (e.g. multiple-choice, short-answer).
36. I try to study in a place that has no distractions (e.g., noise, people talking).
37. I forget to ask my teacher questions about things that confuse me.
38. I wait to the last minute to start studying for upcoming tests.
39. I try to forget about the topics that I have trouble learning.
40. I ask my teacher questions when I do not understand something.
41. I make pictures or diagrams to help me learn concepts.
42. I make sure no one disturbs me when I study.
43. I tell myself exactly what I want to accomplish before studying.
44. I let my friends interrupt me when I am studying.
45. I look over my homework assignments if I don't understand something.
46. I carefully organize my study materials so I don't lose them.
47. I think about the best way to study for each test.
48. I avoid asking questions in class about things I don't understand.
49. I finish all of my studying before I play video games or hang out with my friends.
50. I forget to bring home my study materials when I need to study for tests.

Question 51 is open response.

What are your favorite strategies for studying?

Faculty Survey

By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

The purpose of this research project is to understand how students regulate their learning and what role professors have in helping students to do so. Your responses are completely confidential and sharing honest answers to the following questions will help the researcher to devise a useful intervention to help students use strategies to be successful in college.

1. Did you teach a course for first-year students at Framingham State University in 2020-2021?
   a. Yes
   b. No

2. In which Academic College do you teach?
   a. Arts & Humanities
   b. Business
   c. Education & Social and Behavioral Sciences
   d. Science, Technology, Engineering and Mathematics

3. Years of college teaching experience
   a. 1-3 years
   b. 4-10 years
   c. 11-15 years
   d. 16-24 years
   e. 25+ years

Questions 4-15 are on a 10-point scale.

I am __ % certain that I can…

10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

4. Present content that students relate to other subjects
5. Provide a rationale to make academic tasks relevant
6. Recognize students' thoughts in my explanation of learning tasks
7. Help students recognize how material has value for reaching personal goals
8. Help students to recognize how material has value for learning
9. Create authentic learning opportunities to make knowledge relevant
10. Help students to monitor their own performance appropriately
11. Help students to identify strategies to support their own learning
12. Model strategies that students can use in other classes beyond the academic year
13. Assist struggling students in identifying strategies to support their own learning
14. Provide opportunities for students to set their own learning goals
15. Create opportunities for students to make choices about their learning

Questions 16-17 are open response.

16. What are the top challenges that your students typically encounter in your course? In other words, what things are hard for them as they attempt to complete assignments, tests, or projects?

17. To what extent do you ask students to monitor their actions and/or use of strategies when completing activities? Can you share specific examples?

Appendix D

Faculty Interview Protocol

Pre-Record Checklist

1. Thanks for taking time to speak to me for this Needs Assessment Study I am doing for my dissertation.
2. I emailed you the written consent on [date] and you returned it signed. Do you have any questions about your participation in the study?
3. Before we begin, do you have questions about the nature of the study itself?
4. Before I begin recording, can you change your Zoom name to be a pseudonym of your choice? The recording will be audio-only and will include a transcript with the pseudonym.
5. I will now start recording. You will be asked to consent.

1. To start, in which Academic College do you teach?
    a. Arts & Humanities
    b. Business
    c. Education & Social and Behavioral Sciences
    d. Science, Technology, Engineering and Mathematics

2. How many total years of college teaching experience do you have?

3. Think about the first-year [Fundamentals or College 101] course you teach. Tell me a little about it. What do you hope students will take away from the course?

4. What are the top challenges that your students typically encounter in this [Fundamentals or College 101] course? In other words, what things are hard for them as they attempt to complete assignments, tests, or projects?

5. From your experience, are most students able to overcome their learning difficulties?
    a. What is your sense of how they overcome their learning difficulties?

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6. Do you ever speak to your students about challenges they face in learning?
    a. What are these conversations like?

7. How would you characterize your students' motivation?
    a. Do any of your students display poor motivation?
    b. What do you think are the primary causes of their poor motivation?
    c. Is there anything you do to try and motivate your students?
    d. How effective would you say you feel in motivating them to learn?

8. Think about the most important assignment in the first-year [Fundamentals or College 101] course. Can you describe the assignment to me?
    a. Do you talk to your students about how they can effectively complete that assignment?
    b. (If yes) What do you say?
    c. Do you teach the students how to plan their work on the assignment?

9. To what extent do you teach strategies that help your students to complete assignments, projects, or classroom-based learning activities?
    a. Can you share examples of strategies you teach to students?
    b. Do you focus on a few specific strategies, or do you teach a broad range of strategies for students to choose from?
    c. How do you know whether students adopt the strategies you teach them?
    d. To what extent do you ask students to monitor their actions and/or use of strategies when they work on activities for the course?
    e. When you return a graded test or assignment to students, do you help your students to reflect on how they achieved the outcome?

10. To what extent do you value providing students with freedom to make choices in their learning?
    a. How do you provide students with opportunities to make choices in learning activities?

11. Is there anything else you would like to share about how you see your role in helping students to self-regulate their learning?

Appendix E

Research Matrix

Research Questions (RQ) / Constructs with definition	Instruments/Measures (Items)	Data Collection/Frequency	Data Analysis
PRQ 1: What were faculty and students' experience related to SRL training and support?			
Participant responsiveness (Dusenbury et al., 2003)	1.1 Faculty Posttraining Survey questions (Appendix H, items #1, 2 & 3)	1.1 Administered once following three faculty training sessions	1.1 Coding using an a prior coding scheme, descriptive statistics
Faculty and student engagement and involvement in training and support activities, including their perceptions of the value of weekly journals.	1.2 Faculty Postintervention Survey (Appendix I, items #1-4) 1.3 Faculty postintervention interviews (Appendix J, items #1, 2, 3, & 4) 1.4 Student Postintervention Survey (Appendix K, items #1 & 2) 1.5 Student postintervention Focus Group (Appendix L, items #2, 3, & 5)	1.2-1.5 Administered once at conclusion of intervention	1.2-1.5 Thematic analysis
PRQ 2: To what extent did faculty implement revised assignment prompts, weekly journals, and wise feedback?			
Initial use (Baranowski & Stables, 2000) Presence of SRL guidance in course assignment prompts, total weekly journal prompts assigned, and faculty reported frequency of wise feedback.	2.1 Observations of courses in LMS 2.2 Faculty Postintervention Survey (Appendix I, items #4 & 5) 2.3 Faculty Postintervention	2.1 Twice: a few weeks into the intervention and at conclusion of intervention 2.2-2.3 Administered once at conclusion of intervention	2.1-2.2 Descriptive statistics 2.3 Thematic analysis

	Interviews (Appendix J, items #3, 4, 5, & 6)		
ORQ 1: In what ways did first-year college students report a change in growth mindset and use of SRL strategies at the end of the intervention?			
Self-regulated learning (SRL) Self-regulated learners generate ideas and behaviors that help them to achieve their goals (Zimmerman, 2002).	1.1 Weekly SRL journal (Appendix M, items #1-4)	1.1 Administered weekly for four weeks	1.1 Coding using an a priori coding scheme, descriptive statistics, time series analysis, thematic analysis
Growth mindset Individuals with a growth mindset are more likely to see opportunities to learn and grow in the face of challenges, whereas individuals with a fixed mindset are more likely to feel helpless and view failure as a reflection of their limited intelligence (Dweck et al., 1995).	2.1 Growth Mindset Scale (Dweck et al., 1995; Wang et al., 2021) in student pre- and postintervention surveys (Appendix N)	2.1 Administered twice: preintervention and postintervention	2.1 Descriptive statistics
ORQ 2: To what extent did faculty feel prepared to support student self-regulation following the intervention?			
Self-efficacy to support student self-regulation Perceived self-efficacy relates to the perception one has about one's capability to achieve a given task. Self-efficacy influences one's behavior, such as a person's persistence when faced with obstacles or setbacks (Bandura, 1997).	3.1 Teacher Self-Efficacy Scale for Promoting SRL (Allshouse, 2016) in faculty preintervention and postintervention surveys (Appendix O) 3.2 Faculty Postintervention Survey (Appendix I, item #6) 3.3 Faculty Postintervention Interviews (Appendix J, items #3, 7, & 8)	3.1-3.2 Administered twice: preintervention and postintervention 3.3 Administered at conclusion of intervention	3.1 Descriptive statistics 3.2-3.3 Thematic analysis

Appendix F

Faculty Pretraining Survey: Demographic Questions

18. In which Academic College do you teach?
    a. Arts & Humanities
    b. Business
    c. Education & Social and Behavioral Sciences
    d. Science, Technology, Engineering and Mathematics

19. Years of college teaching experience
    a. 1-3 years
    b. 4-10 years
    c. 11-15 years
    d. 16-24 years
    e. 25+ years

20. What is your current gender?
    a. Woman
    b. Man
    c. Transgender
    d. A gender not listed here
    e. Prefer not to say

Appendix G

Faculty Preintervention Survey: Vignette

Please read the vignette below and use it to answer the question that follows.

Rozey, a student in your class, performed well in high school but has experienced uneven grades in the first tests in your class. She's expressed some anxiety because the strategies that she used in high school do not seem to be working in college. Rozey usually studies by memorizing key concepts, rereading her notes until she can recite them from memory, and spending about four hours studying the night before the test. Although she seems to be pretty motivated, Rozey does not understand why her motivation is not resulting in good grades. She is unsure how to adapt her strategies, despite being aware that they are not fully working for her.

Create a list describing specific things you could do in your classroom to help improve Rozey's self-regulated learning.

Appendix H

Faculty Posttraining Survey

Please rate how strongly you agree with the following statements, where 1 = Strongly Disagree and 5 = Strongly Agree.

	1 Strongly Disagree	2	3	4	5 Strongly Agree
1. I am satisfied with the three training sessions					
2. I feel prepared to provide SRL guidance to my students					

Please read the vignette below and use it to answer the question that follows.

Dan, a student in your class, has been reported by both yourself and other teachers to exhibit academic and motivational difficulties. More specifically, there is a lot of concern about his poor test performance and inconsistent homework completion, his tendency to give up easily, and his overall negative attitude about school. Dan fails most tests and quizzes, and he often seems surprised by his poor performance. When assessments with poor grades are returned, you've noted that Dan immediately stuffs the paper in his backpack and appears disengaged for the rest of the class. Dan reports that he has attempted to use index cards and other strategies to help him learn and study, but "nothing works," and he continues to struggle. In addition, over the past couple of years, Dan has developed a sense of helplessness and poor confidence in school because he does not really understand why things are so difficult. Although Dan acts out and becomes oppositional about completing his work, he does have an underlying desire to do well.

3. Create a list describing specific things you could do in your classroom to help improve Dan's self-regulated learning.

Appendix I

Faculty Postintervention Survey

1. Did the check-ins to examine journal submissions help you to coach students on SRL? Please describe why or why not.

2. Describe how useful the weekly journaling was for supporting student self-regulation?

3. Did the efforts that you and students dedicated to the weekly journals take up time that could have been more usefully spent on other tasks?

4. To what extent did you use the student Learning Strategies module to support students (e.g. such as referencing it in your feedback or office hours)?

5. How frequently did you provide "wise" (growth mindset) feedback as part of your assignment feedback to students? Rate the frequency, where 1 = Never, 3 = Sometimes, and 5 = Always. Please provide a rationale for this rating.

6. To what extent do you feel prepared to support your students to self-regulate their learning? Please explain why you feel the way that you do.

Faculty Postintervention Interview Protocol

Pre-Record Checklist

- Hello, I'm [name of interviewer] and I am conducting this interview on Steve Courchesne's behalf.
- Thanks for taking time to speak to me for this interview about your experience this semester in supporting student self-regulated learning.
- Before we begin, do you have questions about the purpose of this interview?
- Before I begin recording, can you change your Zoom name to be your pseudonym? The recording will be audio-only and will include a transcript with the pseudonym.
- I will now start recording. You will be asked to consent.

1. Can you start by sharing a bit about what you learned this semester related to student self-regulation?

2. Of the different sources of information and support that you received, which would you say were the most valuable? Examples could include the 90-minute training sessions, resources you reviewed, and the check-ins to discuss the students' journal entries, among others.

3. Since joining the study and participating in the trainings with Steve, describe any successes you may have experienced with helping your first-year students to identify useful learning strategies.
   a. Can you share examples?
   b. How would you help students to understand why they might be struggling?

4. How useful was the weekly SRL journaling towards helping you identify the students who needed support?

5. In your assignment instructions, what kinds of guidance or scaffolds did you add following the training to foster self-regulation strategies?

6. Following the training, describe how you provided feedback to support a growth mindset? For example, did you acknowledge to students that the task is challenging but you believed that they could achieve a good outcome?
   a. Did you provide growth mindset-related feedback in assignment feedback or in other ways?
   b. How frequently did you incorporate growth mindset feedback?

7. What types of practices related to supporting self-regulation do you intend to carry forward and try again?

8. How confident do you now feel that you can support your students to develop their skills with self-regulating their learning? Please explain why you feel the way that you do.

Appendix K

Student Postintervention Survey: Open Questions

1. Describe whether the weekly journaling you did in November about learning strategies helped you to think about your learning strategies and/or plan and monitor your learning process.

2. Of the different sources of information and support that you received to support your learning, which would you say were the most valuable, and why? Examples could include the Learning Strategies module, assignment prompts, the weekly journal, and feedback from your professor, among others.

3. Consider in particular the support you received from your professor in November and December. Can you identify specific ways your professor helped you to think about your learning process, such as with planning your work or studying?

4. If you compare your experience before and after you joined the study, did you notice any changes in the guidance your professor gave you?

Appendix L

Student Postintervention Focus Group Protocol

Pre-Record Checklist

- Hello, I'm [name of interviewer] and I am conducting this focus group on Steve Courchesne's behalf.
- Thanks for taking time to speak to me about your experience this semester with learning how to self-regulate your learning.
- Before we begin, do you have questions about the purpose of this interview?
- Before I begin recording, can you change your Zoom name to be a pseudonym? The recording will be audio-only and will include a transcript with the pseudonym.
- I will now start recording. You will be asked to consent.

1. Let's go around the room and I'd like each of you to share your major (or say "undeclared" if you do not yet have one) and the name of your Rams 101 course.

2. Can you start by sharing a bit about what you learned this semester related to self-regulating your learning?

3. Let's consider the different sources of information and support that you received.
    a. To what extent did you find the Learning Strategies module to be useful or not, and why?
    b. Since you joined this study in November, what kinds of support did your professor provide you to help you think about your learning process, get organized, or stay motivated?
    c. If you compare your experience before and after you joined the study, did you notice any changes in the guidance your professor gave you?
    d. How useful was it to participate in the weekly journal? Please share why you feel that way.

4. What new strategies do you intend to carry forward and try again?

5. Describe your experience with the weekly journal in November, which asked you to think about your strategies and challenges. Did the journaling help you to think about learning strategies you could use?
    a. Did the learning strategies journal in November help you with planning and reflecting on your strategies?
    b. How useful was the weekly journaling, and why?

Appendix M

Weekly SRL Journal for Students

Answer the following questions honestly and with as much detail as you can provide. You can consult the Learning Strategies module to get ideas for answering questions.

1. What were your learning successes during the past week? What strategies did you use to help you succeed?

2. What major task or assignment are you working on this week for this class?

3. Consider any challenge(s) you might have with completing this task/assignment. What approaches or strategies can you use to overcome the challenge(s)?

4. What strategies do you think you need to use to perform well on the task/assignment?

Appendix N

Growth Mindset Scale

Please rate how strongly you agree with the following statements, where 1 = Strongly Disagree and 5 = Strongly Agree.

	1 Strongly Disagree	2	3	4	5 Strongly Agree
1. You have a certain amount of intelligence and you can't really do much to change it					
2. Your intelligence is something about you that you can't change very much					
3. You can learn new things, but you can't really change your basic intelligence					

Appendix O

Teacher Self-Efficacy Scale for Promoting SRL

Please rate your degree of confidence to perform each of the following behaviors, where 1 = Cannot do at all and 5 = Highly confident I can do

	1 Cannot do at all	2	3 Moderately confident I can do	4	5 Highly confident I can do
1. Help your students to believe they can do well on schoolwork					
2. Help struggling students understand why they are doing poorly					
3. Motivate students to try harder in school					
4. out the reasons why a student is not motivated					
5. Find ways to help struggling students experience success					
6 Give feedback that helps students improve future learning behaviors					
7. Help students identify the learning strategies that work best for them					
8. Help students understand their control over their performance					
9. Help students use feedback to improve their performance					
10. Get students to consistently track how well they learn					

Student Preintervention Survey: Demographic Questions

2. What is your age?
   a. 18-19
   b. 20-23
   c. 24-29
   d. 30-39
   e. 40-55
   f. Over 55

3. What is your current gender?
   a. Woman
   b. Man
   c. Transgender
   d. A gender not listed here
   e. Prefer not to say

4. How would you best describe yourself?
   a. American Indian or Alaskan Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latinx
   e. Native Hawaiian and other Pacific Islander
   f. White
   g. Other (please specify)
   h. Prefer not to say

5. Has either of your parents earned a four-year college/university degree?
   a. Yes
   b. No
   c. Don't know

6. Did you receive a Federal Pell Grant as part of your financial aid package?
   a. Yes
   b. No
   c. Don't know

Appendix Q

Logic Model

Context	Processes			Outcomes
Nearly a third of State University's first-year students who started college in fall 2019 did not persist into their second year. According to a needs assessment study, students at State University inconsistently use evidence-based strategies and need support with time management. This intervention aims to support faculty with scaffolding student SRL, and prepare students to engage more deeply in SRL behaviors.	Inputs	Outputs		**Short-Term** -Students: Increased use of different types of SRL strategies, such as time management, planning, help seeking. -Students: Higher ratings of growth mindset **Intermediate** -Faculty: Increased self-efficacy to support SRL -Students: Higher grades in courses (GPA) **Distal** -Students: Increased persistence/retention
	-Faculty time (7-11 hours) -Instructional designer time (5-6 hours) -Student time (2 hours) -Access to software: Canvas LMS, Qualtrics, Zoom -Assignment prompts in participating courses -Weekly SRL journal prompts	**Activities** -Faculty training on SRL and journaling to support SRL (3 hours) -Faculty update assignment prompts to scaffold SRL (1-2 hours) -Faculty assign SRL journals (2 hours) -Student training on SRL and learning strategies (1-2 hours) -Students submit course assignments and weekly SRL journals -Faculty feedback incorporates wise feedback to promote growth mindset	**Participation** -College 101 faculty for fall 2022 (N = 5-10) -First-year students in College 101 courses taught by participating faculty (N = 15-100)	
	Assumptions ● Faculty see value of coaching SRL ● Faculty have time to participate in intervention ● Students submit assignments and weekly journals ● Students review assignment/journal feedback		External Factors ● Competing demands for faculty time ● Metacognitive illusions, (e.g., overconfidence bias) and procrastination	

		can reduce students' motivation to learn new strategies

Categories of Self-Regulated Learning Interview Schedule (SRLIS)

Categories of Strategies	Definitions
1. Self-evaluation	Statements indicating student-initiated evaluations of the quality or progress of their work, e.g., "I check over my work to make sure I did it right."
2. Organizing and transforming	Statements indicating student-initiated overt or covert rearrangement of instructional materials to improve learning, e.g., "I make an outline before I write my paper."
3. Goal setting and planning	Statements indicating student setting of educational goals or subgoals and planning for sequencing, timing, and completing activities related to those goals, e.g., "First I start studying two weeks before exams, and I pace myself."
4. Seeking information	"Statements indicating student-initiated efforts to secure further task information from nonsocial sources when undertaking an assignment, e.g., "Before beginning to write the paper, I go to the library to get as much information as possible concerning the topic."
5. Keeping records and monitoring	Statements indicating student-initiated efforts to record events or results, e.g., "I took notes of the class discussion." "I kept a list of the words I got wrong."
6. Environmental structuring	Statements indicating student-initiated efforts to select or arrange the physical setting to make learning easier, e.g., "I isolate myself from anything that distracts me." "I turned off the radio so I can concentrate on what I am doing."
7. Self-consequences	Statements indicating student arrangement or imagination of rewards or punishment for success or failure, e.g., "If I do well on a test, I treat myself to a movie."
8. Rehearsing and memorizing	Statements indicating student-initiated efforts to memorize material by overt or covert practice, e.g., "In preparing for a math test, I keep writing the formula down until I remember it."
9-11. Seeking social assistance	Statements indicating student-initiated efforts to solicit help from peers (9), teachers (10), and adults (11), e.g., "If I have problems with math assignments, I ask a friend for help."
12-14. Reviewing records	Statements indicating student-initiated efforts to re-read tests (12), notes (13), or textbooks (14) to prepare for class or further testing, e.g., "When preparing for a test, I review my notes."
15. Other	Statements indicating learning behavior that is initiated by other persons such as teachers or parents, and all unclear verbal responses, e.g., "I just do what the teacher says."

Note. Table from Zimmerman and Martinez-Pons (1986, p. 618).

Appendix S

Student Learning Strategies Module Outline

Section	Learning Objectives	Alignment with SRLIS Categories
How do I take control of my learning?	• Identify the SRL feedback loop, including phases of forethought, performance, and reflection • Identify the value of self-monitoring learning, such as through journaling • Explore key concepts covered in the learning strategies module	n/a
A Growth Mindset	• Describe what it means to have a growth mindset	n/a
Defining Goals and Managing Your Time	• Explain how time management plays a factor in goal setting, leading to short-term, medium-term, and long-term objectives • Identify overall academic goals • Identify and apply motivational strategies to support goal achievement • Explore time management strategies to make time for college success activities (e.g., studying, going to class, extracurricular activities, etc.) • Identify procrastination behaviors and strategies to avoid them	Goal setting and planning
Your Physical Environment	• Analyze the impact of your surroundings while you study • Define distraction and multitasking • Assess the degree to which personal technology may help or hinder your study efforts	Environmental structuring
Working with Instructors	• Identify options for communicating with instructors • Discuss the benefits of utilizing instructor office hours • Evaluate effective email communication strategies with instructors	Seeking social assistance (teachers)
Deep Learning	• Identify differences between passing a test and gaining knowledge (e.g., cramming versus learning) • List study techniques that help long-term retention of knowledge	Organizing and transforming Keeping records and monitoring Reviewing records

	• Explain how peer groups can aid in-class preparation	
Active Learning	• Define active learning • Explain the value of hands-on, interactive learning • Identify resources for applying active learning strategies to your studies, both in and out of the classroom	Organizing and transforming Keeping recording and monitoring Reviewing records
Evaluating Results	• Identify the learning benefits of test taking • Identify strategies for learning from mistakes and from doing poorly on tests or exams	Self-evaluation Reviewing records
Support Resources at FSU	• Identify resources on campus that provide academic and emotional support, including the Center for Academic Success and Achievement	Seeking information Environmental structuring Seeking social assistance

Note. The student Learning Strategies module mainly includes content from a [Lumen Learning](#)

College Success open education resource. The introduction to the SRL feedback loop was

created by the instructional designer at State University. Resources related to distributed

learning, retrieval practice, and elaboration were curated from the [Learning Scientists](#) website.

Appendix T

Outline of Faculty Training

Agenda for Session 1 of Faculty Training: The SRL Feedback Loop

Time	Outline	Source of Self-Efficacy
10 mins	**Introductions and overview of intervention** • Why it is important to support student self-regulation • Structure of faculty training. • Faculty outputs posttraining: updated assignment prompts; SRL weekly journal; wise feedback. • Purpose of weekly SRL journal for students.	Verbal persuasion on importance of faculty support for SRL
5 mins	**Self-Reflection** How do I currently help students to self-regulate their learning?	Emotional arousal in acknowledging how faculty already support students
20 mins	**Presentation** • What is SRL? • What are components of each phase in the cycle? • What are strategies for the forethought phase?	Vicarious experience about SRL components
25 mins	**Individual Activity** • Access the Learning Strategies module for students. • Identify which pages in the module support students during the forethought phase of self-regulation.	Performance experience by noting specific strategies
20 mins	**Group Activity** • Access the matrix of SRL components (a shared editable advance organizer). • As a whole group, we will fill in some blanks in matrix with SRL components of forethought, performance, and reflection.	Performance experience by classifying specific SRL components
10 mins	**Debrief and Preview of Session 2** • Encourage faculty to review the rest of the Learning Strategies module before next session. • Did everyone assign the weekly SRL journal? • Next session will focus on motivation and SRL.	

Agenda for Session 2 of Faculty Training: Motivation and SRL

Duration	Outline	Source of Self-Efficacy
10 mins	**Group Discussion: Our Experiences with Student Motivation** • What factors impact our students' motivation to learn? • What happens when students face setbacks?	
20 mins	**Presentation** • What is self-efficacy and growth mindset? • Why are they important? • How do we make attributions about learning outcomes in the reflection phase? • Introduction to wise feedback for supporting a growth mindset (Yeager et al., 2014).	Vicarious experience of self-beliefs about learning Verbal persuasion on value of wise feedback
10 mins	**Individual Activity** • Add wise feedback to your repertoire. • Identify specific points in the learning cycle (forethought, performance, reflection) to incorporate this type of feedback.	Performance experience by planning use of wise feedback
15 mins	**Presentation** • What are self-motivation strategies in the performance and reflection phases?	Vicarious experience about self-motivation strategies
25 mins	**Group Activity** • Access the matrix of SRL components (a shared editable document). • As a whole group, we will expand the matrix of SRL components to include examples of specific strategies.	Performance experience by classifying specific SRL components
10 mins	**Debrief and Preview of Session 3** • The Matrix of SRL components and the Learning Strategies module are resources for supporting SRL. • Next session, we will focus on monitoring strategy use and providing feedback. • Encourage faculty to select an important assignment to workshop in next session.	

Agenda for Session 3 of Faculty Training: Feedback and Reflection

Duration	Outline	Source of Self-Efficacy
25 mins	**Group Discussion: Focus on Process** • What are process versus outcome goals? • Review: Why is it important to set process goals and provide feedback on process? • What are processes in the performance phase that students follow to complete assignments or prepare for exams? Refer to the Active Learning and Deep Learning sections of the Learning Strategies module	Vicarious Experience about process & outcome goals, as well as performance phase strategies
10 mins	**Individual Activity: SRL scaffolding in assessments** • Participants were invited to come to session prepared to examine instructions/guidance for a major assignment or exam. • Considering our discussion of process and using the matrix of SRL components we developed, add language to an assignment or exam preparation that could help students with forethought, performance control, and/or reflection phases of SRL.	Performance experience by updating an assignment prompt
10 mins	**Group: Share scaffolding in assignments** • Volunteers share what changes they made to the chosen assignment or exam prep to scaffold SRL. • Participants invited to give each other feedback.	Vicarious experience about scaffolding SRL in assignments
5 mins	**Presentation** • Review: SRL weekly journal as a way for students to monitor their behaviors and strategies. • How can student journaling promote self-reflection?	Verbal persuasion on value of self-monitoring
30 mins	**Think-Pair-Share: Address a Vignette** • Participants review a vignette describing a student's approach to completing assignments. • Individually, participants jot notes on how to support the student. • Breakout in pairs: Compare notes and expand on ideas. • Full group: Share out ideas generated and debrief how we can provide feedback related to SRL journals.	Performance experience by determining SRL feedback for a student

10 mins	**Conclude Training**
	• Any remaining questions?
	• Faculty should examine each assignment and test and consider adding language to instructions to scaffold student SRL.
	• Reminder to include wise feedback when you provide students with feedback on their journals, assignments, and tests.
	• Reminder to administer and monitor the weekly SRL journals.
	• Invitation to bi-weekly meetings for rest of semester to examine student journals and explore ways to support SRL.