Exploring Learning How to Learn Courses that Support Self-Regulated Learning Skills in Higher Education

Beth Hosek, M.S.

George Mason University—College of Education and Human Development

EDUC 897

Dr. Sheri Berkeley

December 2023

Exploring Learning How to Learn Courses that Support Self-Regulated Learning Skills in Higher Education

There is a well-established importance of self-regulated learning (SRL) and its three phases (i.e., forethought, performance, reflection) for the academic and life success of all learners (e.g., Zimmerman & Martinez-Pons, 1989). Learning how to learn (LhtL) courses are one way academic and life skills are taught. This may include motivating students to take responsibility for their own learning to boost their cognitive and affective learning skills (Black et al., 2007; Crick, 2007; Hautamaki et al., 2002). Little research exists explicitly connecting SRL with LhtL courses. This is despite the overlap in the underlying principles and outcomes of each. The work that does exist tends to look at higher education, a developmental period when learners are ingraining their learning habits. Consequently, this paper will draw connections between the impacts of SRL and the relevance of LhtL courses. First, it will discuss fundamental theoretical frameworks, vital to examining these ideas, including social-cognitive theory. Next, the importance of SRL will then be established. Finally, the introduction will conclude with a discussion of Learning How to Learn interventions. This will establish the need for the present scoping review that connects the fundamental concepts of SRL to LhtL courses, establishing their overlap and the subsequent importance of implementing such integrated interventions.

Theoretical Frameworks

Social-cognitive theory as it applies to the context of SRL and LhtL will provide the theoretical foundation for this paper.

Social-Cognitive Theory: An Overview

Albert Bandura's Social-Cognitive Theory is based upon the idea that an individual's beliefs, goals, and emotions all support their ultimate motivation (Bandura, 1991). Agency is key

to this as it refers to the ability of the individual to exercise control over their context; one's self-belief in their ability to do so is their self-efficacy (Bandura, 1999; Schunk & DiBenedetto, 2020). Supplementing these internal processes, motivation is also fostered by social contexts (Schunk & DiBenedetto, 2020). This might be done through behavior modeled by other individuals, learning experiences where the learner has the opportunity to master the task, social persuasion, and emotional responses (Cook & Artino, 2016). Through these social opportunities, and combined with the individual's internal motivation, an individual learner is provided with a hierarchy of goals based on what is important to the learner and what is important in the social context (Bandura, 1991). The social environment thereby influences the agency of the individual, and impacts one's self-concept, self-efficacy, goal hierarchies, and affect (Bandura, 1991; 1999).

Social-cognitive theory forms the foundation for self-regulated learning (SRL; Zimmerman, 1989). SRL is made up of three main components: the forethought phase, where learners plan and strategize how they will approach a learning task; the performance phase, in which a learner self-monitors while they attempt a learning task; and reflection, when a learner evaluates their learning process (Zimmerman, 1989). This process is used by successful learners to develop and work towards their goals (Bandura, 1991; Panadero, 2014). Agency is key to self-regulation via motivation (Bandura, 1999; Schunk & DiBenedetto, 2020). This is particularly due to self-efficacy being foundational to both agency and SRL as it provides learners with the tools they need to exact control over their motivation and subsequent behavior (Bandura, 1991; Cook & Artino, 2016; Panadero, 2014). This in turn cascades into the performance and reflection phases of SRL as it facilitates the learner's adaptation of their beliefs, goals, and emotions to adjust their overall motivation (Bandura, 1991).

Importance of SRL

SRL skills (e.g., time management, healthy self-confidence, and self-awareness) are key to student achievement, with the two being positively related (Lau et al., 2018; Zimmerman & Kitsantas, 2005, 2014). A key idea of SRL theory is that these skills can be taught to all students, regardless of socio-economic status (SES), disability, and/or other contextual factors (Zimmerman, 2002). Therefore, SRL interventions can be successfully used to foster many skills in all learners, including emotional regulation, SRL skills, self-efficacy, and academic outcomes (Zimmerman & Kitsantas, 2005). These intervention effects are improved further in smaller classrooms as individual relationships are fostered through better teacher-student ratios (Coelho et al., 2021). Despite the effectiveness of such interventions, there is a current lack of these programs. However, the number of these interventions is slowly growing in K-12 education (Dignath & Büttner, 2008). In many studies, SRL interventions demonstrate gains in student SRL skill implementation and improve academic outcomes (Cleary et al., 2017; Cousins et al., 2022; Festas et al., 2015; Hacker et al., 2015).

Within the context of SRL skill development, self-efficacy—or one's self belief that they can succeed in a given domain—is an important construct for learner success. This can be observed when students in SRL interventions are provided with agency over their learning. This enables development of global self-efficacies and self-efficacy for SRL (DeMink-Carthew et al., 2020; Green et al., 2021; Knight et al., 2019). This demonstrates the reciprocal relationship where self-efficacy encourages skill use. Skill implementation and self-efficacy snowball off each other and grow in conjunction, aligning with the triadic reciprocality at the core of social-cognitive theory and SRL (Zimmerman & Martinez-Pons, 1989). Beyond this, SRL skills and self-efficacy together support learner resilience. In turn, this supports student academic competence. This relationship is observed despite risk factors a learner may be exposed to

(Cutuli et al., 2013), indicating SRL and self-efficacy may be protective against adversity (Benight & Bandura, 2004; Gallagher et al., 2020; Leal & Silvers, 2021; Wesarg et al., 2020). To this end, self-efficacy as a component of interventions is key to generalizability and transferability of skills across domains, contexts, relationships, and the self (Knight et al., 2019). The mechanism through which this occurs is self-efficacy's contribution to learner outcomes, mental health, academic success, and resiliency to risk factors (Coelho & Sousa, 2018).

Phases of SRL

SRL has three phases—forethought, performance, and reflections—that operate cyclically (Zimmerman, 1989). Each and its subcomponents will be discussed below.

Forethought. The forethought phase initiates the SRL cycle. It entails various means of preparing for action (Zimmerman, 1989). Task analysis, for instance, specifically addresses task preparation, and can take multiple forms. This might look like goal setting where students indicate their ultimate aim or stepping stones on the way there to outline the specific learning outcomes they wish to achieve (Locke & Latham, 1990; Zimmerman, 1989). This also may look like what is known as strategic planning, where a learner chooses a means of approaching a task that is apt contextually (Allshouse, 2016; Pressley & Wolloshyn, 1995), to include the sequence of tasks, timing of activities, and deadlines for their goals (Zimmerman, 1989).

The other major component of the forethought phase is self-motivational beliefs. These beliefs are defined as those that motivate an individual learner to decide upon a task, begin engaging in the task, and persist in this engagement through task completion via one's personal agency to engage in the SRL cycle to achieve their goals. One type of self-motivational belief is self-efficacy. This is an individual's personal belief about their capability to engage in effective learning (Allshouse, 2016; Bandura, 1986; Zimmerman, 2000) Another type of self-motivational

belief is outcome expectations, or one's beliefs about how a learner's own behavior influences the outcome of an activity (Allshouse, 2016; Bandura, 1997). Intrinsic interest and valuing is also considered a self-motivational belief. This set of beliefs drives behavior based upon the rewards inherent to a task's outcome, whether the task is simply fun, or if the learning task has importance for a learner (Allshouse, 2016). Finally, goal orientation is a belief that addresses how a learner thinks about their competency related to a learning task. This belief might be mastery oriented and focused on increasing competency, or performance oriented, and focused on demonstrating a learner's ability to others.

Performance. The performance phase is the second step in the SRL cycle and addresses what a learner does during the learning task itself. This is primarily broken down into two main components: self-control and self-observation. Self-control refers to a learner's ability to optimize how they engage in and focus on a task (Allshouse, 2016; Zimmerman, 1989). Self-control may include regulatory strategies (e.g., self-instruction; imagery; attention focusing) to exercise control over how the learner engages in the task. It may also include task strategies (e.g., seeking information; self-consequating; rehearsing and memorizing) to optimize task engagement by boiling the task down to its basic components, then reorganizing these parts to be meaningful in context.

Self-observation is the other main component of the performance phase. This refers to how a learner observes and tracks how they perform on a learning task, the context of the task, and the effects of different actions taken during working on the task. This might look like an individual tracking their cognitive and metacognitive learning processes. This emerges in two main types of behaviors. First, self-recording entails an individual learner noting one's cognitive and metacognitive processes during a learning task (through e.g., charts, graphs) when they occur to

accurately understand one's progress (Allshouse, 2016; Zimmerman, 2000). Second, self-experimentation involves a learner systematically varying how they engage in a learning task so as to expand their understanding as well as their performance and/or control over their learning (Zimmerman, 2000)

Reflection. The third and final phase of the SRL cycle is reflection. This phase entails the learner drawing conclusions about their performance to allow them to adapt the next time they engage in a learning task. One way this might occur is through self-judgement. Self-judgement refers to an individual engaging in self-evaluation (i.e., the systematic comparison of one's performance to a goal standard) or causal attributions (i.e., relating performance on a task to internal/external, controllable/uncontrollable, and/or temporary/permanent contextual factors; Allshouse, 2016). Self-reaction is also a component of the reflection phase. Here, the self-satisfaction or self-affect of an individual learner composes their reaction (satisfied or dissatisfied) to their performance (Allshouse, 2016; Zimmerman, 2000). Finally, self-reflection is made up of two parts. Adaptive inferences are the conclusions a learner makes about how they should change their approach to learning during the subsequent iteration of a task to perform better. Defensive inferences are those adaptations made to protect the self from dissatisfaction and negative affect as a result of their performance (Zimmerman, 2000).

Learning How to Learn Courses

LhtL teaches students how to engage in the practice of learning through motivating students to be self-responsible about learning agentically (Black et al., 2007; Crick, 2007). Those learners who engage in LhtL contexts gain cognitive and affective learning skills that lead them to learning success (Black et al., 2007; Hautamaki et al., 2002). Beyond these fundamental concepts, however, the LhtL is ill-defined in the literature. The following section will provide a

broad overview of the available information on LhtL courses, broken down by their function, structure, implementation, and utility.

Course Function

When we discuss the function of any course, we are referring to what its intended purpose is. What is the course supposed to do for its learners? In a LhtL context, these courses focus on learning practices themselves (Black et al., 2007), with the idea that learning is a performance-based process, and it can be improved, both holistically and through individual components (Apple & Ellis, 2015). This type of learning focus is vital for students as it frames learning as an amalgam of capacities and habits that promote lifelong learning (Black et al., 2007). Furthermore, a learner's self-efficacy impacts the LhtL process, and amplifies its impact (Apple & Ellis, 2015). Overall, the focus of LhtL courses is simply to teach learners how to think about their learning. Those learners that do engage in such courses shift their learning behaviors (Nordell, 2009). LhtL founds itself upon the idea that learners are motivated to learn, are self-responsible, and autonomous in their learning (Black et al., 2007; Crick, 2007).

Course Structure and Implementation

The structure of a course boils down to what topics are chosen for students to engage in, as well as how these topics are organized and sequenced, all to support the overall function of the class. Relatedly, course implementation refers to putting these plans into action. This includes how the course is taught, learning is engaged in, and assessments are presented. These facets all help a learner relate to the course purpose. In a LhtL context, these courses may manifest as problem-based learning (Hillman, 2003). In others, they may simply appear as study skills workshops (Nordell, 2009), as well as in other forms.

Course Utility

The utility a course has for participating learners refers to how the course practically benefits or has utility for a learner: What are the outcomes of the learner engaging in the implemented structure of the course and does that align with the intended purpose? In the present context, LhtL requires agency and self-regulation in turn (Crick, 2007), and so provides learners with the opportunity to engage in such skills. The stronger these SRL skills in the LhtL context, the more the learner will be successful (Black et al., 2007). Furthermore, the more a learner is willing to engage in the LhtL context, the more they will be able to maintain both cognitive and affective SRL skills (Hautamaki et al., 2002). Ultimately, because LhtL courses teach SRL skills, learners gain the ability to be intentional and reflective with their learning. This then cascades into self-responsible learning, and in turn autonomy, where the learner has learned how to learn (Black et al., 2007).

The Gap in the Literature and the Present Review

It can be seen from the above information that there is a strong overlap between SRL and LhtL principles. However, little work exists explicitly connecting the two, including in an intervention context. Given the importance of these skills and learning environments, exploring how these ideas are integrated in practice is vital. To this end, this scoping review aims to understand how LhtL courses are presented in the literature as a means to teach SRL skills in higher education. Additionally, it will explore commonalities and differences across those courses with regard to the research designs used to explore them. Finally, this review will illuminate gaps in the current literature to reveal proposed next steps.

Methods

Arksey and O'Malley (2005) describe a five-stage framework for performing scoping reviews. This framework aims to provide researchers with a process for performing such reviews

that has a foundation of transparency and replicability. This framework guides the present scoping review, and each of the five steps are described in detail below.

Identifying Initial Research Questions

The focus of the present scoping review is to better understand how Learning How to Learn courses teach SRL skills to students in higher education. Research questions were constructed to examine a wide range of literature related to the topic of interest. Based on the above, the following questions will guide this scoping review:

Learning How to Learn in University

1. Within learning how to learn courses in higher education, what components and strategies of self-regulated learning have been investigated?
    1. What types of research designs have been used to investigate Learning How to Learn courses in higher education?
2. What gaps in the research literature exist around theories of self-regulated learning relative to learning how to learn courses in higher education?

Identify Relevant Studies

Based on Arksey and O'Malley's (2005) guidance, broad keywords were assembled to be used as search terms. This enabled finding a broad range of available literature on the topic at hand. Search terms are listed in Table 1. These search terms were developed to find available literature that focused on learning how to learn in higher education. They were developed through consultation with a university education librarian who recommended means of refinement of key terms, database identification, implementation of Boolean operator use, and adjustment of inclusion/exclusion criteria (described in Table 2). The past 10 years (2013-2023) was chosen as an appropriate time period to both focus on recent evolutions in self-regulated

learning interventions, while still providing a long enough time period to broadly explore relevant literature. Eight electronic databases were included in the search: Academic Search Complete; APA PsycArticles; APA PSYCInfo; Education Database; Education Research Complete; ERIC; Social Sciences Citation Index; Teacher Reference Center. These databases were used to identify research articles included in peer-reviewed journals. Connected Papers was used to perform ascendant and descendant searches of papers selected for inclusion as a means to identify any other primary sources relevant to the current review. This scoping review was performed between August and December 2023.

Table 2

Search Terms for Search

(”Learning how to learn” OR “learning to learn” OR LhtL OR LhL OR LtL)
(”higher education” OR “college” OR “university” OR “post secondary” OR “postsecondary” OR “undergraduate” OR “graduate”)

Table 3

Inclusion and Exclusion Criteria

Criteria	Include	Exclude
Date	2013-2023	before 2013
Topic/ Context of Findings	Learning how to learn Intervention/classroom context	Not an intervention study
Population	higher education students	not higher education students
Language	English	Not English
Publication	Full-paper accessible Published in a peer-review journal	Gray literature Theses and dissertations Literature review/syntheses

Study Selection

Using the keywords chosen in collaboration with the university librarian, 2324 articles were identified. All article meta-data was uploaded into Rayyan (Ouzzani et al., 2016) for

screening. After removal of duplicates from across examined databases, paper abstracts were reviewed for inclusion and exclusion criteria. This review showed a number of articles that were irrelevant due to relating to the wrong field (it was later realized this was due to inclusion of abbreviations in the keyword search terms), not being an empirical article, being an empirical article focusing on interventions outside of higher education, or the article was written in a non-English language; one article was excluded for being outside of the date range in focus. No relevant articles were identified in the Teacher Reference Center database.

Based on this screening process through the inclusion and exclusion criteria, 20 relevant studies were identified for further eligibility related to the research questions. Full text versions of the articles were reviewed, and a further 10 were excluded due to not being an empirical article, not being an intervention or classroom-based study, and/or the body of the article outside of the abstract being in a non-English language.

This process follows the guidelines for the Preferred Reporting of Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Moher et al., 2009) and is depicted in Figure 1.

Data Charting and Collation

Arskey and O'Malley (2005) state the fourth step of scoping reviews is creating a chart noting details of included articles. Collation of data included summaries comprised of authorship, publication year, journal of publication, study location, study design, study methods, sample size, and SRL constructs included. For a table denoting authorship, publication year, journal of publication, and location, see Table 4. For a table denoting participant descriptions,

see Table 5. For a table denoting design and method descriptions, see Table 6. Finally, for a table denoting SRL constructs addressed, see Table 7.

Summarizing and Reporting Findings

Finally, step five of Arksey and O'Malley's (2005) framework for performing scoping reviews is presentation of a summary and report of the findings. These are presented in the results section below.

Figure 1

PRISMA Chart

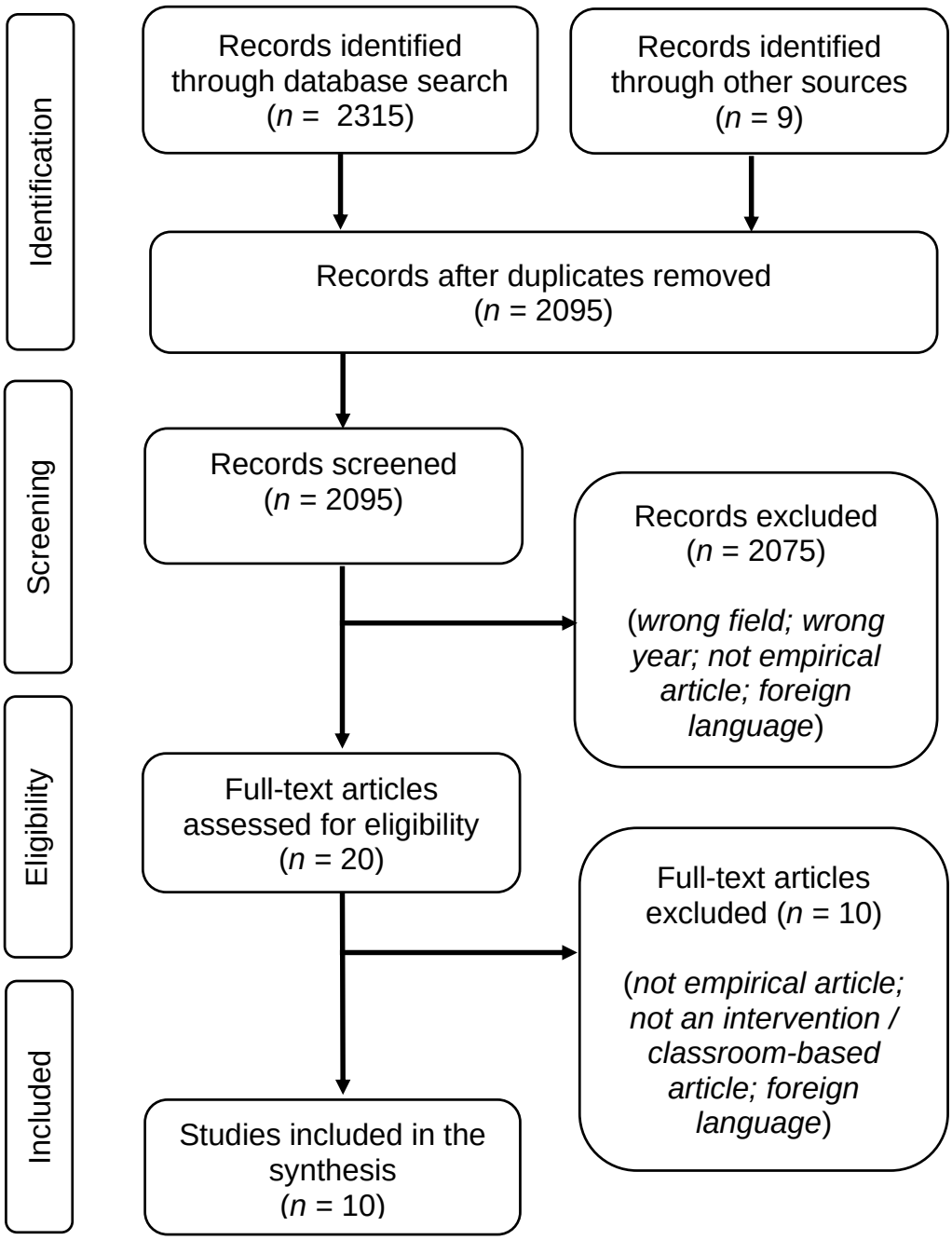

Table 4

List of Papers Included in Analysis

Authorship, Year	Journal	Location of Study
Bernacki et al., 2020	Journal of Educational Psychology	USA
Bowering et al., 2017	The Canadian Journal for the Scholarship of Teaching and Learning	Canada
Brown-Kramer, 2021	Teaching of Psychology	USA
Davis et al., 2020	International Journal for the Scholarship of Teaching and Learning	Canada
Espada et al., 2020	Research in Learning Technology	Spain
Garcia-Esteban et al., 2021	Interactive Learning Environments	Spain
Hensley et al., 2021	Teaching of Psychology	USA
Kjellgren et al., 2018	Medical Teacher	Sweden
Lluch Molins & Cano Garcia, 2023	Journal of New Approaches in Educational Research	Spain
Ploran et al., 2023	Acta Psychologica	USA

Table 5

Information on Settings and Samples as Reported in Reviewed Papers

	Bernacki et al., 2020	Bowering et al., 2017	Brown-Kramer, 2021	Davis et al., 2020	Espada et al., 2020	Garcia-Esteban et al., 2021	Hensley et al., 2021	Kjellgren et al., 2018	Lluch Molins & Cano Garcia, 2023	Ploran et al., 2023
Setting	Undergraduate Anatomy and Physiology course	Student Success course for undergraduates on academic probation	Introduction to Psychology course	Educational Psychology course	Applied Teaching Methodology course	Content and Language Integrated Educational Technology course	Learning to Learn course	"LearnAble" course	Online SRL course with associated peer feedback process	Learning to Learn course
Sample Size	N = 122	N = 100	N = 361	N = 139	N = 110	N = 100	N = 176	N = 222	N = 448	N = 124
Education Level	Undergraduate: • Distribution unknown	Undergraduate: • Distribution unknown	Undergraduate: • First-year (n = 208; 80.9%) • Second-year (n = 30; 11.6%) • Third-year (n = 10; 3.9%) • Fourth-year (n = 6; 2.3%) • Unknown (n = 3; 1.2%)	Undergraduate: • First-year 52%	Undergraduate: • Third-years, 100%	Undergraduate: • Fourth-years, 100%	Undergraduate: • 5% first-year, • 34% second-year, • 24% third-year, • 16% fourth-year;	Not reported	Undergraduate: • Distribution unknown	Undergraduate: • First-year, 100%
Program of Study	Not reported	• 33% undecided • 22% Professional Studies programs (e.g., Applied Human Nutrition, Business and Tourism) • 45% Arts and Science	• Not in psychology (177; 49.6%) • Psychology Major (35; 13.6%) • Psychology Minor (20; 7.8%) • Unknown (75; 29.1%)	Distribution unknown, list provided includes: • social sciences • business • humanities • science • engineering	• 100% Physical Activity and Sport Sciences	• 100% Primary Education	Not reported	• 100% Health sciences	• Pharmacy (57.38%) • Archaeology (3.61%) • Management and Public Administration (9.02%) • Computer Engineering (13.10%) • Initial Teacher Training (8.69%)	Not reported

									• Social Education (8.20%)	
Gender Identity	Intervention: • Males, 15, 28% • Females, 69, 82% Comparison: • Males 29, 24% Females, 93, 79%	Intervention • Men, 26 • Women, 59 Comparison • Male, 5 • Female, 10	• Female (248; 68.7%) • Male (106; 29.4%) • Other (2; 0.6%) • Unknown (5; 1.4%)	• 45% female • 55% male	Intervention: • 16 women • 50 men Comparison: • 9 women • 35 men	Not reported	• 70% male • 30% female	Not reported	Not reported	Not reported
Racial and Ethnic Identity	Intervention: • Asian n = 20 (24%) • Black n = 2 (2%) • Caucasian n = 26 (31%) • Hispanic n = 16 (19%) • Pacific Islander n = 1 (1%) • Native n = 1 (1%) • Multiple n = 18 (21%) Comparison: • Asian n = 47 (34%) • Black n = 5 (4%) • Caucasian n = 32 (23%) • Hispanic n = 26 (19%) • Pacific Islander n = 1 (1%) • Multiple n = 11 (8%)	Not reported	• Asian or Asian American (18; 5.0%) • Black (15; 4.2%) • European American (263; 72.9%) • Hispanic or Latino (32; 8.9%) • Native American (2; 0.6%) • Other (1; 0.3%) • Unknown (6; 1.7%)	Not reported	Not reported	Not reported	• 49% White • 17% Black • 10% Asian-American • 8% international • 7% Hispanic • 6% bi- or multiracial • 3% undisclosed	Not reported	Not reported	Not reported

Table 6

Information on Designs and Methods as Reported in Reviewed Papers

	Bernacki et al., 2020	Bowering et al., 2017	Brown-Kramer, 2021	Davis et al., 2020	Espada et al., 2020	Garcia-Esteban et al., 2021	Hensley et al., 2021	Kjellgren et al., 2018	Lluch Molins & Cano Garcia, 2023	Ploran et al., 2023
Course Description	Supplementary course on university LMS within an undergraduate anatomy and physiology course	Student success course for students on academic probation	Introduction to Psychology Course	Elective Educational Psychology Course	Required Course on Applied Teaching Methodology	Course on content and language integrated learning	College Success skills course	"LearnAble" course	Peer feedback course intervention embedded into five degree programs	Learning to Learn course
Pedagogical Methods	Online modules with readings and activities	Lecture Group discussion Written assignments Presentations	Reading learning strategy articles Writing a reflection on strategy use	Lectures Online lab application assignments	Video lectures Slideshows Practical application-focused classes Quizzes Discussion Groups	Face-to-face lessons Online small group work Telecollaboration learning unit design project Small group blog/wiki	Lectures Videos Discussions Activities Textbook readings Weekly textbook-related assignment Course book project	Lectures Group discussions (face-to-face and online) Group conference paper and presentation	Online lessons Online group discussions Online activities	Written reflections Quizzes Exams Time-Management Calendars Review of university resources
Type(s) of Data	Quantitative	Quantitative	Quantitative	Quantitative	Quantitative	Quantitative Qualitative	Qualitative	Quantitative Qualitative	Quantitative Qualitative	Quantitative Qualitative
Instruments Used	Course quizzes and exams time stamped logs of student activity in L2L course on LMS metadata describing the activity	GPA Academic probation status Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991) The Learning Strategies Scale	Demographics Motivated Strategies for Learning Questionnaire Grades in course and on 4 exams	Concept pre-assessment previous semester's GPA MyPlanner use Lecture synthesis completion Regulation of Learning Questionnaire	Self-perceived level of development of the "learning to learn" competence in the university (Muñoz-San Roque et al., 2016)	Questionnaire Learning to Learn (European Commission, 2012)	Short answer course evaluation questions	Learning process questionnaire (LPQ; Kember et al. 2004) Approaches to teaching inventory (ATI; Trigwell et al. 2005) Course evaluations Reflective journals	Satisfaction and perception of learning questionnaire Open-ended learning perception and satisfaction questions	Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & DeGroot, 1990; Pintrich et al., 1993) Theories of Intelligence Scale – Self Form for Adults (TISS; Dweck, 2000)

		(Garcia & Pintrich, 1996; Pintrich et al., 1991) Learning and Study Strategies Inventory (LASSI; Weinstein & Palmer, 2002; Weinstein, Schulte, & Palmer, 1987) Academic Procrastination Questionnaire (APQ; Day et al., 2000)		number of days course was viewed final course grade					Semi-structured focus group protocol
Data Analysis Method	Descriptive statistics ANCOVA MANCOVA	Descriptive statistics Repeated measures ANOVA Paired t-test	Descriptive statistics T-tests ANOVA Chi-Square correlation	Binary hierarchical logistic regression analyses	Mann–Whitney U test Cohen's d Repeated measure ANOVA Partial eta-squared	Descriptive statistics Frequency data Self-evaluation essays	Qualitative Analysis	Mann–Whitney U test Fisher's test Thematic Analysis	Descriptive statistics	Repeated measures ANOVA Two-tailed independent-samples t-tests Thematic analysis

Table 7

	Bernacki et al., 2020	Bowering et al., 2017	Brown-Kramer, 2021	Davis et al., 2020	Espada et al., 2020	Garcia-Esteban et al., 2021	Hensley et al., 2021	Kjellgren et al., 2018	Lluch Molins & Cano ~ .	Ploran et al., 2023
Forethought	X				X					
Task Analysis	X			X						
Goal Setting	X	X		X	X	X	X		X	
Strategic Planning	X	X			X	X		X	X	X
Self-Motivational Beliefs				X						
Self-Efficacy		X				X		X		
Outcome Expectations										
Intrinsic Interest/Valuing		X				X	X			
Goal Orientation						X				
Performance					X	X	X		X	X
Self-Control										
Regulatory Strategies				X				X		
Self-Instruction	X	X		X		X		X		X
Imagery										
Attention Focusing	X	X								
Task Strategies		X	X	X	X	X		X		X
Self-Observation	X			X						
Reflection	X	X		X		X	X		X	X
Self-Judgement					X		X			
Self-Evaluation		X		X	X	X		X	X	
Causal Attributions										X
Self-Reaction										
Self-Satisfaction/Affect										
Self-Reflection					X		X			X
Adaptive Inferences										
Defensive Inferences										

Self-Regulated Learning Skills Included in Study

Note: "X" indicates skill was mentioned in the respective paper

Results

The following section outlines findings from analyzing the included papers. First, the included SRL strategies will be discussed (Table 7), followed by research designs (Tables 5 and 6), followed by gaps present in the research literature.

Research Question 1: Within learning how to learn courses in higher education, what components and strategies of self-regulated learning have been investigated?

Various components of Zimmerman's (1989) theory of SRL were addressed across the ten papers included in the analysis. All three phases—forethought, performance, and reflection—were addressed, with all papers mentioning at least one of these in the context of LhtL in higher education.

Forethought

The majority of the papers included in the analysis—nine of ten—mentioned components of the forethought phase of SRL. The paper by Brown-Kramer (2021) did not discuss the forethought phase.

All nine papers that discussed forethought acknowledged task analysis (e.g., goal setting, strategic planning). Kjellgren et al. (2018) and Ploran et al. (2023) were unique with respect to task analysis as they simply mentioned that participants engaged in planning the use of various strategies.

Other papers focused on the goal setting component of task analysis. For instance, Bernacki et al. (2020) reviewed students defining tasks and their objectives and setting goals accordingly. A discussion of goal setting was also present in Davis et al. (2020), with the authors stating, "Students set a goal for an upcoming study session…" Hensley et al.'s (2021) work focused on goal setting within task analysis as well, stating "Having options promoted a sense of

personalization in the course as students focused on self-selected goals that were meaningful for their learning and growth."

Espada et al. (2020) drew attention to goals as well ("I organise my studying setting realistic objectives"), but also acknowledged strategic planning ("I establish times for study"). A similar pattern was seen in Garcia-Esteban et al.'s (2021) work where they state, "I set my learning goals autonomously. I successfully plan my learning and am therefore able to complete most tasks and tests on time," and "I obtain any required learning tools in advance." Bowering et al. (2017) stated the intervention they examined emphasizes "…becoming an autonomous and motivated learner who sets well-defined goals…" as well as study strategy selection, "…(e.g., textbook reading, lecture note-taking, test preparation, and time management)." Finally, Lluch Molins and Cano Garcia (2023) acknowledged multiple components of tasks analysis, stating participants engaged in "writing goals, intermediate checkpoints and planning of the main actions to be undertaken."

Self-motivational beliefs (e.g., self-efficacy, outcome expectations, intrinsic interest/valuing, goal orientation), another major portion of the forethought phase of SRL, were acknowledged by three papers. All three discussed students' intrinsic interests and the valuing of their learning. For instance, Hensley et al. (2021) discuss how student personalized goals "were meaningful for their learning and growth." Garcia-Esteban et al. (2021) make similar statements, such as acknowledging that participants "understand that what I learn now will understand that what I learn now will serve me in the future." However, this same paper also nods to student self-efficacy, stating that participants were "self- confident" and "not afraid of challenges." Bowering et al. (2017) also discussed intrinsic interest and valuing in conjunction with self-efficacy, mentioning "personal responsibility for learning" alongside noting the academic

success of "self-efficacious students" as they "are more likely to succeed and persist to graduation..."

Performance

All ten papers included in the analysis discussed the performance phase of SRL. Of these, Hensley et al. (2021) only broadly mentioned the performance phase, rather than specific components, through discussion of how "cognitive engagement supported the development of competence." Beyond this discussion of engagement during the learning task, performance phase components were not discussed in this paper.

For the other papers, self-control and self-observation were subcomponents of the performance phase that were discussed. Only two of the ten papers included self-observation as a component of SRL. Bernacki et al. (2020) discussed self-observation through participant monitoring of their own learning progress and the effectiveness of implemented strategies. Davis et al. (2020) presented self-observation similarly, indicating that participants used "An online questionnaire filled out weekly" to understand their progress on their goals. The eight other papers did not discuss self-observation.

The remaining papers all broadly discussed self-control within the performance phase. Interestingly, most of this discussion centered on various strategies used related to regulation of the task (e.g., self-instruction, imagery, attention focusing). Six of these papers discussed specific strategies. For instance, Bernacki et al. (2020) indicated participant use of retrieval, spaced practice, self-explanation, and active avoidance of distractions within the study context. Bowering et al. (2017) stated the course studied focused on "improving critical thinking skills and study strategies (e.g., textbook reading, lecture note-taking, test preparation, and time management)." Kjellgren et al. (2018) also noted specific strategies, including self-monitoring,

information seeking, and communication skills. Ploran et al., (2023) similarly discussed spaced retrieval. In contrast, Davis et al. (2020) simply stated, “The course exposed students to a variety of regulatory skills, strategies, and beliefs meant to improve their approaches to learning,” without going into further detail about what that looked like in the intervention context; Espada et al. (2020) similarly mentioned participants were “able to use different strategies.”

Brown-Kramer (2020) was unique in that it discussed the varying utility of different strategies participants were exposed to. High utility strategies included “practice testing, distributed practice.” Moderate utility strategies discussed included “elaborative interrogation, self-explanation, interleaved practice.” Finally, low utility strategies named included “summarization, highlighting/underlining, mnemonic, mental images, rereading.”

Reflection

Of the three phases of SRL, the reflection phase was discussed the least robustly. Nine of the ten papers included in the analysis did acknowledge the reflection phase; Brown-Kramer (2021) did not discuss the reflection phase at all. Additionally, Bernacki et al. (2020) and Ploran (2023) only acknowledged the phase broadly by discussing participant “adaptation.” Kjellgren et al. (2018) were also limited in the scope of their discussion on reflection, simply noting that participants used “journaling” as a reflection strategy.

The remaining papers focused their discussion of the reflection phase on one subcomponent—self-evaluation. For instance, Bowering et al. (2017) states participants “…are engaged in self-assessment and reflection to identify their own thinking patterns and to gain insight into why they have not been academically successful.” Hensley et al. (2021) discuss self-evaluation by stating their participants engaged in “attaining understanding, awareness of, and insight into their own tendencies, preferences, strengths, and weaknesses.”

Davis et al. (2020) also discussed how students self-evaluate their progress based on "their goal and the challenges they faced." Espada et al. (2020) similarly ask participants "if the results correspond to the objectives I set at the beginning of the task." Garcia-Esteban et al. (2021) follow this same vein by having participants state "what I achieved in learning and plan in what areas and how I can improve." Finally, Lluch Molins and Cano Garcia (2023) matched this reflection process through having participants engage in "a reflection on how students' learning process has been enriched and what will be the next (feed-forward)."

Research Question 1a: What types of research designs have been used to investigate Learning How to Learn courses in higher education?

The ten papers included in this analysis were similar in the intervention characteristics, but varied greatly with respect to how participant characteristics were reported.

With respect to course contexts, the majority were related to psychology (Brown-Kramer, 2021), educational psychology (Davis et al., 2020), teaching (Espada et al., 2020), or education in general (Garcia-Esteban et al., 2021; Lluch Molins & Cano Garcia, 2023). One study looked specifically at a student success course (Bowering et al., 2017), and three focused on LhtL as the topic (Hensley et al., 2021; Kjellgren et al., 2018; Ploran et al., 2023). One course was the exception: Bernacki et al. (2020) was in a science course setting as it took place within an undergraduate anatomy and physiology class.

Most of these were stand-alone courses. However, one was a supplemental intervention embedded within various courses (Lluch Molins & Cano Garcia, 2023). Furthermore, though all courses were aimed at undergraduates, only one paper indicated that the course was required (Espada et al., 2020), and one other indicated it was an elective class (Davis et al., 2020). For the remaining courses it is unknown how the intervention fit into participants' programs of study. In

terms of pedagogical methods utilized within the classes all implemented either face-to-face or online video lectures. Many included online modules, activities, group work, and supplementary videos (Bernacki et al., 2020; Davis et al., 2020; Espada et al., 2020; Garcia-Esteban et al., 2021; Hensley et al., 2021; Kjellgren et al., 2018; Lluch Molins & Cano Garcia, 2023). Bowering et al. (2017) and Kjellgren et al. (2018) had participants engage in presentations and both Bowering et al. (2017) and Brown-Kramer (2021) had a focus on written work.

With respect to participant samples, all studies had at least 100 participants. Nine of ten studies reported their participants were undergraduates, with Kjellgren et al. (2018) not reporting education level. Davis et al. (2020) and Ploran et al. (2023) only included first-years; Espada et al. (2020) only included third years; and Garcia-Esteban et al., (2021) focused on fourth-years. Two studies (Bowering et al., 2017; Hensley et al., 2021) were open to undergraduates of any level. Participant program of study was reported inconsistently and not by all studies; for those that did report program of study, three were focused on specific majors: Espada et al. (2020) only included physical activity and sport sciences students; Garcia-Esteban et al. (2021) only included primary education students; and Kjellgren et al. (2018) only included health sciences students. Bowering et al. (2017), Brown-Kramer (2021), and Lluch Molins and Cano Garcia (2023) had their studies open to students in multiple programs.

Across all studies, gender, racial, and ethnic identity were reported inconsistently, if at all. Six of ten papers reported gender identity, with four (Garcia-Esteban et al., 2021; Kjellgren et al., 2018; Lluch Molins & Cano Garcia, 2023; Ploran et al., 2023) not providing any information on gender identity for participants. Across those that did report gender identity, only one provided options beyond the gender binary (Brown-Kramer, 2021). The remainder were inconsistent in term use (man/woman versus male/female). Beyond gender identity, only three

papers reported race and ethnicity data (Bernacki et al., 2020; Brown-Kramer, 2021; Hensley et al., 2021), and across these three race and ethnicity categories varied. These inconsistencies provide difficulties in comparing demographic data across studies.

Across all ten studies, only one focused on collective qualitative data (Hensley et al., 2021). Four additional studies collected both qualitative and quantitative data (Garcia-Esteban et al., 2021; Kjellgren et al., 2018; Lluch Molins & Cano Garcia, 2023; Ploran et al., 2023). The remaining studies focused on the collection of quantitative data. For qualitative data collection, data sources included written reflections, short answer data, and focus groups; data analysis implemented was thematic analysis for all studies. With respect to studies that collected quantitative data, all collected grades or related academic outcome data. All also collected course interaction data, surveys relating to motivation and regulation, as well as learning processes and beliefs. Quantitative data analysis, in addition to descriptive statistics, tended to use mean comparisons, such as t-tests and various forms of analysis of variance. One paper, Davis et al. (2020) implemented regression analyses. Finally, Lluch Molins and Cano Garcia's (2023) and Garcia-Esteban et al.'s, (2021) work only used descriptive statistics to explore their quantitative data.

Research Question 2: What gaps in the research literature exist around theories of self-regulated learning relative to learning how to learn courses in higher education?

As can be seen from the above exploration of SRL components and research designs in LhtL courses in higher education, gaps are present in the literature. Specifically relating to components of SRL explored in the literature, we can see deficits related to all three stages of the SRL cycle. For instance, with respect to the forethought stage, while there is plenty of exploration of task analysis, only three of ten papers discussed self-motivational beliefs,

indicating a deficit in understanding of how self-motivational beliefs play a part in the LhtL context in higher education. Furthermore, while the performance phase was discussed by all included papers and seems to be reasonably robustly explored in terms of strategy use, participant experiences of the reflection phase seems to be neglected. More specifically, while self-evaluation was explored in detail, other components, such as self-satisfaction, adaptive and defensive inferences, and more, were not discussed at all. Taken together, there seems to be a large gap in the LhtL literature with respect to the affective components of the SRL cycle.

The research designs across the included studies also present gaps. For instance, it is important for studies going forward to report gender, race, and ethnicity to be able to understand how LhtL courses impact students across demographic backgrounds; this was a component of design missing from many of the included studies. Related to reporting needs, making sure it is understood what education level participants are at and their degree programs would go a long way to contextualizing results. Also in this vein, it was notable that many intervention contexts were related to undergraduate social sciences and education; being able to look at LhtL outside of social science and education, as well as post-graduate and professional learning contexts seems to be missing from the literature.

Discussion

It can be seen from the results of this analysis that there is is overlap between the principles of LhtL courses and SRL skills, such as students being self-responsible for their learning to boost their cognitive and affective learning skills (Black et al., 2007; Crick, 2007; Hautamaki et al., 2002). A discussion connecting the results to the broader pre-existing literature follows. The paper then ends with a discussion of limitations and suggested directions for future work.

It is well established that SRL skills are key for student achievement (Lau et al., 2018; Zimmerman & Kitsantas, 2005, 2014), and this is reinforced through the collection of achievement data and alignment with these results in the quantitative studies examined (e.g., Bernacki et al., 2020; Bowering et al., 2017; Brown-Kramer, 2021; Davis et al., 2020; Espada et al., 2020; Garcia-Esteban et al., 2021; Kjellgren et al., 2018; Lluch Molins & Cano Garcia, 2023; Ploran et al., 2023). These improved outcomes from LhtL courses align with the improved academic outcomes in other kinds of interventions that teach SRL skills (Cleary et al., 2017; Cousins et al., 2022; Festas et al., 2015; Hacker et al., 2015).

However, despite the established importance of the affective components of SRL and those affective contextual factors that impact SRL (e.g., emotional regulation, individual relationships; Coelho et al., 2021; Zimmerman & Kitsantas, 2005), few included studies examined these aspects of SRL in either the forethought or reflection phases of SRL. This gap is notable as it is well established that self-beliefs—including self-efficacy—is key to learner success (DeMink-Carthew et al., 2020; Green et al., 2021; Knight et al., 2019) as well as generalizability and transferability of skills across domains, contexts, relationships, and the self (Knight et al., 2019).

Limitations

The analysis presented in this paper had several limitations. First, the inclusion of abbreviations in the search presented challenges for the researcher due to a large number of studies to filter through that were irrelevant to the question at hand or the field; this larger-than-anticipated amount of filtering could always increase the risk of researcher error. Second, and relatedly, there was only one researcher performing the data collection and analysis; for a more sound study, multiple coders should be included to ensure increased validity of results. Third and

finally, only ten years' worth of papers were included in the data collection and analysis. To fully understand the picture of LhtL and SRL in higher education, 20 years of research should be analyzed.

Future Research

Based on the results of the analysis and the limitations presented in the research, there are a few directions for future research to be suggested. First, future work should explore and examine the affective components of SRL within LhtL contexts in higher education, particularly during the forethought and reflection phases of SRL. Second, more detailed analysis should be done going forward with regard to demographic variables to understand the effectiveness of LhtL courses for teaching SRL skills across student backgrounds. Third, analysis should be expanded to look at LhtL courses in post-graduate education, as well as in contexts beyond social sciences and education.

References

Allshouse, A. D. (2016). Professional development in self-regulated learning: effects of a workshop on teacher knowledge, skills, and self-efficacy, and the development of a coaching framework (Publication No. 10297495) [Doctoral dissertation, Rutgers, The State University of New Jersey]. ProQuest Dissertations and Theses Global.

Apple, D. K., & Ellis, W. (2015). Learning how to learn: Improving the performance of learning. International Journal of Process Education, 7(1), 21-28.

Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change. Advances in behaviour research and therapy, 1(4), 139-161.

Bandura, A. (1991). Social cognitive theory of self-regulation. Organizational behavior and human decision processes, 50(2), 248-287.

Bandura, A. (1999). Social cognitive theory: An agentic perspective. Asian journal of social psychology, 2(1), 21-41.

Banfield, J. F., Wyland, C. L., Macrae, C. N., Munte, T. F., & Heatherton, T. F. (2004). The cognitive neuroscience of self-regulation. Handbook of self-regulation: Research, theory, and applications, 62-83.

Bernacki, M. L., Vosicka, L., & Utz, J. C. (2020). Can a brief, digital skill training intervention help undergraduates “learn to learn” and improve their STEM achievement? Journal of Educational Psychology, 112(4), 765–781. https://doi.org/10.1037/edu0000405

Black, P., McCormick, R., James, M., & Pedder, D. (2006). Learning how to learn and assessment for learning: A theoretical inquiry. Research Papers in Education, 21(02), 119-132.

Bjork, J. M., Knutson, B., Fong, G. W., Caggiano, D. M., Bennett, S. M., & Hommer, D. W. (2004). Incentive-Elicited Brain Activation in Adolescents: Similarities and Differences from Young

Adults. The Journal of Neuroscience, 24(8), 1793–1802. https://doi.org/10.1523/JNEUROSCI.4862-03.2004

Blakemore, S.-J., & Choudhury, S. (2006). Development of the adolescent brain: Implications for executive function and social cognition. Journal of Child Psychology and Psychiatry, 47(3–4), 296–312. https://doi.org/10.1111/j.1469-7610.2006.01611.x

Bowering, E. R., Mills, J., & Merritt, A. (2017). Learning How to Learn: A Student Success Course for At Risk Students. The Canadian Journal for the Scholarship of Teaching and Learning, 8(3). https://doi.org/10.5206/cjsotl-rcacea.2017.3.12

Bradley, R. L., Browne, B. L., & Kelley, H. M. (n.d.). Examining the Influence of Self-Efficacy and Self-Regulation in Online Learning. 13.

Britner, S. L., & Pajares, F. (2006). Sources of science self-efficacy beliefs of middle school students. Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching, 43(5), 485-499.

Brown-Kramer, C. R. (2021). Improving students' study habits and course performance with a "learning how to learn" assignment. Teaching of Psychology, 48(1), 48–54. https://doi.org/10.1177/0098628320959926

Caprara, G. V., Fida, R., Vecchione, M., Del Bove, G., Vecchio, G. M., Barbaranelli, C., & Bandura, A. (2008). Longitudinal analysis of the role of perceived self-efficacy for self-regulated learning in academic continuance and achievement. Journal of Educational Psychology, 100(3), 525–534. https://doi.org/10.1037/0022-0663.100.3.525

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

Coelho, V. A., Brás, P., & Matsopoulos, A. (2021). Differential effectiveness of an elementary school social and emotional learning program during middle school transition in Portugal. School Psychology, 36(6), 475.

Coelho, V. A., & Sousa, V. (2018). Differential effectiveness of a middle school social and emotional learning program: Does setting matter? Journal of Youth and Adolescence, 47(9), 1978–1991. https://doi.org/10.1007/s10964-018-0897-3

Compton, A. B., Panlilio, C. C., & Humphreys, K. L. (2023). What's the matter with ACEs? Recommendations for considering early adversity in educational contexts. Child Abuse & Neglect, 106073.

Cook, D. A., & Artino Jr, A. R. (2016). Motivation to learn: an overview of contemporary theories. Medical education, 50(10), 997-1014.

Cousins, E., Bol, L., & Luo, T. (2022). Exploring long-term impacts of self-regulated learning interventions in K-12 contexts: A systematic review. Current Issues in Education, 23(1).

Crick, D. R. (2007). Learning how to learn: The dynamic assessment of learning power. The Curriculum Journal, 18(2), 135-153.

Davis, S. K., Edwards, R. L., Hadwin, A. F., & Milford, T. M. (2020). Using Prior Knowledge and Student Engagement to Understand Student Performance in an Undergraduate Learning-to-Learn Course. International Journal for the Scholarship of Teaching & Learning, 14(2), 1–12. https://doi.org/10.20429/ijsotl.2020.140208

DeMink-Carthew, J., Netcoh, S., & Farber, K. (2020). Exploring the potential for students to develop self-awareness through personalized learning. The Journal of Educational Research, 113(3), 165-176.

Dignath, C., & Büttner, G. (2008). Components of fostering self-regulated learning among students. A meta-analysis on intervention studies at primary and secondary school level. Metacognition and Learning, 3(3), 231–264. https://doi.org/10.1007/s11409-008-9029-x

Eccles, J. S. (2004). Schools, Academic Motivation, and Stage-Environment Fit. In Handbook of Adolescent Psychology (pp. 125–153). John Wiley & Sons, Ltd. https://doi.org/10.1002/9780471726746.ch5

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. American Psychologist, 48(2), 90–101. https://doi.org/10.1037/0003-066X.48.2.90

Elkind, D. (1998). Behavioral Disorders: A Postmodern Perspective. Behavioral Disorders, 23(3), 153–159. https://doi.org/10.1177/019874299802300303

Erikson, E. H. (1950). Growth and crises of the “healthy personality.” In Symposium on the healthy personality (pp. 91–146). Josiah Macy, Jr. Foundation.

Erikson, E. H. (1968). Identity youth and crisis (No. 7). WW Norton & company.

Espada, M., Navia, J. A., Rocu, P., & Gómez-López, M. (2020). Development of the learning to learn competence in the university context: Flipped classroom or traditional method? Research in Learning Technology, 28. https://doi.org/10.25304/rlt.v28.2251

Feldmann, S. C., Martinez-Pons, M., & Shaham, D. (1995). The Relationship of Self-Efficacy, Self-Regulation, and Collaborative Verbal Behavior with Grades: Preliminary Findings. Psychological Reports, 77(3), 971–978. https://doi.org/10.2466/pr0.1995.77.3.971

Festas, I., Oliveira, A. L., Rebelo, J. A., Damião, M. H., Harris, K., & Graham, S. (2015). Professional development in self-regulated strategy development: Effects on the writing performance of eighth grade Portuguese students. Contemporary Educational Psychology, 40, 17-27.

Garcia-Esteban, S., Villarreal, I., & Bueno-Alastuey, M. C. (2021). The effect of telecollaboration in the development of the Learning to Learn competence in CLIL teacher training. Interactive Learning Environments, 29(6), 973–986. https://doi.org/10.1080/10494820.2019.1614960

Green, A. L., Ferrante, S., Boaz, T. L., Kutash, K., & Wheeldon-Reece, B. (2021). Social and emotional learning during early adolescence: Effectiveness of a classroom-based SEL program for middle school students. Psychology in the Schools, 58(6), 1056–1069. https://doi.org/10.1002/pits.22487

Hacker, D. J., Dole, J. A., Ferguson, M., Adamson, S., Roundy, L., & Scarpulla, L. (2015). The short-term and maintenance effects of self-regulated strategy development in writing for middle school students. Reading & Writing Quarterly: Overcoming Learning Difficulties, 31(4), 351-372. https://doi.org/10.1080/10573569.2013.869775

Hautamäki, J., Arinen, P., Niemivirta, M. J., Eronen, S., Hautamäki, A., Kupiainen, S., ... & Scheinin, P. (2002). Assessing learning-to-learn: A framework.

Hensley, L., Sayers, R., Brady, A., & Cutshall, J. (2021). Supporting Autonomy, Competence, and Relatedness in a Learning-to-Learn Course: College Students' Insights Into Effective Instruction. Teaching of Psychology, 48(3), 236–247. https://doi.org/10.1177/0098628320977270

Hillman, W. (2003). Learning how to learn: problem based learning. Australian Journal of Teacher Education, 28(2), 1-10.

Hosek, B., Kitsantas, A., King, S., Echeverria, R., & Wahidi, S. (2023). Learning how to learn: Student voices on the function and utility of a student-engaged design intervention in a rural middle school. Social Psychology of Education. DOI: 10.1007/s11218-023-09816-9

Kjellgren, K. I., Hendry, G., Hultberg, J., Plos, K., Rydmark, M., Tobin, G., & Säljö, R. (2008). Learning to learn and learning to teach—Introduction to studies in higher education. Medical Teacher, 30(8), 239-e245. https://doi.org/10.1080/01421590802258896

Knight, M. A., Haboush-Deloye, A., Goldberg, P. M., & Grob, K. (2019). Strategies and Tools to Embrace Prevention with Upstream Programs: A Novel Pilot Program for Enhancing Social and Emotional Protective Factors in Middle School Students. Children & Schools, 41(4), 213–220. https://doi.org/10.1093/cs/cdz020

Kuhn, D. (2006). Do Cognitive Changes Accompany Developments in the Adolescent Brain? Perspectives on Psychological Science, 1(1), 59–67. https://doi.org/10.1111/j.1745-6924.2006.t01-2-.x

Laskey, M. L., & Hetzel, C. J. (2010). Self-Regulated Learning, Metacognition, and Soft Skills: The 21st Century Learner. ERIC.

Lau, C., Kitsantas, A., & Miller, A. (2015). Using Microanalysis to Examine how Elementary Students Self-regulate in Math: A Case Study. Procedia - Social and Behavioral Sciences, 174, 2226–2233. https://doi.org/10.1016/j.sbspro.2015.01.879

Lluch Molins, L., & Cano Garcia, E. (2023). How to Embed SRL in Online Learning Settings? Design Through Learning Analytics and Personalized Learning Design in Moodle. Journal of New Approaches in Educational Research, 12(1), 120. https://doi.org/10.7821/naer.2023.1.1127

Nelson, C. A., Thomas, K. M., & De Haan, M. (2007). Neural Bases of Cognitive Development. In W. Damon & R. M. Lerner (Eds.), Handbook of Child Psychology (p. chpsy0201). John Wiley & Sons, Inc. https://doi.org/10.1002/9780470147658.chpsy0201

Nordell, S. E. (2009). Learning How to Learn: A Model for Teaching Students Learning Strategies. Bioscene: Journal of College Biology Teaching, 35(1), 35-42.

Panadero, E. (2014). ?Como autorregulan nuestros alumnos? Modelo de Zimmerman sobre estrategias de aprendizaje. Anales de Psicología, 30(2), 450–462. http://dx.doi.org.mutex.gmu.edu/10.6018/analesps.30.2.167221

Ploran, E. J., Overman, A. A., Lee, J. T., Masnick, A. M., Weingartner, K. M., & Finuf, K. D. (2023). Learning to Learn: A pilot study on explicit strategy instruction to incoming college students. Acta Psychologica, 232, 103815. https://doi.org/10.1016/j.actpsy.2022.103815

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. Contemporary educational psychology, 60, 101832.

Usher, E. L., & Pajares, F. (2006). Sources of academic and self-regulatory efficacy beliefs of entering middle school students. Contemporary Educational Psychology, 31(2), 125–141. https://doi.org/10.1016/j.cedpsych.2005.03.002

Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. Review of educational research, 78(4), 751-796.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. Journal of educational psychology, 81(3), 329. Zimmerman, B. J. (2000). Attaining Self-Regulation: A Social Cognitive Perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds), Handbook of Self-Regulation (pp. 13-41). San Diego, CA: Academic Press.

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., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process goals to outcome goals. Journal of Educational Psychology, 89(1), 29–36. https://doi.org/10.1037/0022-0663.89.1.29

Zimmerman, B. J., & Kitsantas, A. (2005). Homework practices and academic achievement: The mediating role of self-efficacy and perceived responsibility beliefs. Contemporary educational psychology, 30(4), 397-417.

Zimmerman, B. J., & Kitsantas, A. (2014). Comparing students' self-discipline and self-regulation measures

and their prediction of academic achievement. Contemporary educational psychology, 39(2), 145-155.

Zimmerman, B. J., & Martinez-Pons, M. (1989). 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

Zuffianò, A., Alessandri, G., Gerbino, M., Luengo Kanacri, B. P., Di Giunta, L., Milioni, M., & Caprara, G. V. (2013). Academic achievement: The unique contribution of self-efficacy beliefs in self-regulated learning beyond intelligence, personality traits, and self-esteem. Learning and Individual Differences, 23, 158–162. https://doi.org/10.1016/j.lindif.2012.07.010