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Effects of Metacognitive Training on the Academic Self-Regulation of Japanese College Students

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Effects of Metacognitive Training on the Academic Self-Regulation
of Japanese College Students

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A dissertation submitted in partial fulfillment

Of the requirements for the degree of

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Introduction

Purpose of the Study

The purpose of this study is to investigate the effects of self-regulated learning strategies training and the effects of gender on college students' academic self-regulation development. In part, this study attempts to replicate Schmitz and Wiese's (2006) research on the academic self-regulation of Japanese college students. This intervention includes metacognitive strategies such as goal setting, time-management, and self-control. In addition, a practical aim of this study is to provide college teaching staff with a research-based rationale for including metacognitive elements into their teaching.

Background of the Study

Based on the social cognitive perspective, Zimmerman & Schmitz (2011) defined self-regulation of learning as self-generated thoughts, feelings, and actions planned and cyclically adapted in order to attain personal goals. It requires students to be active in their personal, behavioral, motivational, and cognitive learning tasks. Also, learners use self-regulation to transform their mental abilities into academic skills. However, self-regulation is a complex and multidimensional construct. Additionally, metacognitions are critical processes that guide self-regulation (Azevedo, Johnson, & D'Mello, 2011). Chapter Two of this dissertation presents an

examination of the history and different interpretations of these constructs.

To be successful, it is necessary for students to develop the ability to engage in effective self-regulated learning (Winne & Hadwin, 2008). Pintrich (2000) delineated effective self-regulated learning as an active and constructive process. Learners should set goals for their learning and attempt to monitor, regulate, and control their cognition. Motivation, behavior, and the contextual features of their environment guide and constrain this process. In a cyclical fashion, monitoring and control are fundamental processes that guide self-regulation; effective control is contingent upon monitoring (Azevedo et al., 2011). Numerous studies (Abar & Loken, 2010; Cho & Shen, 2013; Pintrich, 2000; Zimmerman & Martinez-Pons, 1988) have shown that skillful self-regulated students use metacognitive learning strategies, such as planning, monitoring, and evaluating, more often than less skillful self-regulated students.

Self-regulation involves not only metacognition, but also motivational and behavioral elements. These elements are crucial when individual are adjusting their actions and goals to achieve a desired outcome. Schunk and Zimmerman (2008) showed that students increased their motivation and achievement when they received self-regulation instruction. Schmitz and Wiese (2006) demonstrated that the training program enhanced self-efficacy and self-regulated learning for college students. Self-regulated learners focus on mastering goals, or they have a tendency to

seek to develop competencies by mastering skills or tasks. They are also self-confident about their ability to learn, and highly value learning tasks (Zimmerman & Schunk, 2011).

Research studies (Bandura, 1986; Mullen, 2007, 2009; Orange, 1999; Schunk, Pintrich, & Meece, 2008) have indicated there is a positive relationship between the development of college students' academic self-regulatory skills and interactions with peers and faculty. Faculty and staff, as well as college students, have always been aware of the important relationship between academic motivational issues and environmental factors (Bandura, 1986; Kitsantas, Zimmerman, & Cleary, 2000; Schunk et al., 2008). Learners often need to control various environmental resources (Pintrich, 2003; Zimmerman, 2008), such as time, study atmosphere, and students' use of peers and faculty members to access help (Pintrich and De Groot, 1990).

With regard to the college setting, there are a variety of studies that examine the role of self-regulated learning strategy training (Azevedo & Cromley, 2004; Ching, 2002; Hofer & Yu, 2003; Jacobson and Harris, 2008; Purdie & Hattie, 2002; Zimmerman, 1999, 2004). Researchers have stated that college students could have learned academic self-regulatory strategies or learning skills via interventions (Jacobson & Harris, 2008; Purdie & Hattie, 2002). Providing comprehensive training on self-regulated strategies to students in classroom settings improved their task performance (Hofer & Yu, 2003), their metacognitive understandings (Ching, 2002),

their positive motivation (Ching 2002), and their use of strategies (Hofer & Yu, 2003).

Azevedo and Cromley (2004) conducted a study to provide students with a 30-minute hyper media training on self-regulated learning in order to facilitate their understanding about the circulatory system. Azevedo and Cromley found that self-regulated learning training fostered a more sophisticated conceptual understanding and led to the use of learning strategies.

By developing self-regulated learning skills, students can become more proficient in self-regulatory processes through personal experiences that require them to be an engaged and informed participant (Zimmerman & Schunk, 2011). However, the self-regulatory approach is complex; it neither assumes that one strategy is effective for all students, nor does it assume that a certain implementation process will be effective for students.

Gender difference within students' self-regulatory processes has involved complex factors too. Unfortunately, research examining this factor has not been consistent (Pintrich & Zusho, 2002). According to Pintrich and Zusho gender may have moderated the relations between motivational and self-regulatory processes and various outcome measures. There have been a number of studies (Bussey & Bandura, 1999; Eccles & Wigfield, 2002; Usher & Pajares, 2008) that have tested social influences that promote students' development of self-regulated learning and self-efficacy beliefs. These studies have shown that one of the major ways in which

gender influences learning and performance is through the differing self-efficacy beliefs held by males and females for academic tasks and self-regulated learning. However, more research is necessary before definitive conclusions can be drawn on gender differences within college students' complex self-regulatory processes. Furthermore, the complexity has deepened because some students have used their life experiences to learn strategies. Therefore, the focus of this study was to investigate the effects of self-regulated learning strategies training and the effects of gender on college students' academic self-regulation development.

Significance of the Study

Academic self-regulation has been a significant element in higher education in terms of college students' motivation, learning, and development into becoming independent beings. One goal of higher education is to nurture independent, motivated, and self-regulated students who will become experts in a given field (Bembenutty, 2011). Both students and educators should endeavor to find mechanisms of academic self-regulation and factors to facilitate becoming academic self-regulators.

McKeachie & Svinicki (2010) and other researchers (Schunk, Pintrich & Meece, 2008; Zimmerman & Schunk, 2011) have shown concern that educators lack models, strategies, and methods for teaching self-regulation. As a result, an application of self-regulation such as

teaching self-regulatory processes has not emerged as a necessary element in educational fields.

This has been especially true for the field of higher education in Japan.

School entrance exam processes have often been rigorous and competitive when entering high schools and universities in Japan. For some students it has even begun when entering elementary and junior high schools. Those who have made it into selective schools have already developed study skills and strategies in order to obtain higher scores on standardized tests.

Acquiring study skills and metacognitive strategies has been something students have needed to obtain on their own in the process of the test-taking process. This has been an assumption held by many educators, parents, and students. Learning skills and strategies are considered essential elements for good students, yet these skills have not been taught in school settings systematically. This expectation has confused those who are working in educational fields due to the fact that Japanese society has been facing the issue of free college admission and the problems of the decrease in scholastic ability in addition to social immaturity among college students. Yamada (2009) found that 72% of Japanese university students spent 10 hours or fewer per week on outside-of-class study. In addition, according to a survey with 48,233 university students, one out of four university students believed that everything necessary to learn should be taught in class - they should not have to learn independently outside of class

(Center for Research on University Management and Policy, 2007).

In light of the above-mentioned complexities, it was important to investigate the effects of self-regulated learning and the effects of gender on college students' academic self-regulation development. This study will contribute to a body of knowledge that currently includes few studies exploring academic self-regulation among college students in Japan.

Research Hypotheses

The following research hypotheses were examined:

1. There is a significant group (two levels: treatment group and comparison group) effect on college students' academic self-regulation as measured by the MSLQ subscale scores "motivation" and "metacognition."
2. There is a significant effect for gender on college students' academic self-regulation as measured on the MSLQ using the subscale scores "motivation" and "metacognition."
3. There is a significant group by gender interaction effect on college students' academic self-regulation as measured by the MSLQ subscale scores "motivation" and "metacognition."

Chapter Two

Review of the Literature

Chapter Two focuses on theories and empirical studies related to academic self-regulation and metacognition. Of importance are motivational theories that include drive theory, conditioning theory with subsets of balance and dissonance theories, and cognitive consistency theory. Equally important is the social cognitive perspective to academic self-regulation. Three views include self-regulation development, observational learning through modeling, and academic self-regulation. Then, a fourth view concerning gender in academic self-regulation is analyzed. The second section of Chapter Two focuses on empirical studies that support three theories: (a) academic self-regulation, (b) gender differences in self-regulated learning, and (c) teaching self-regulation.

Motivation Theories

Motivation has been a crucial topic because it explains why people behave as they do. Motivation has played an important educational role in learning and human behavior. Behaviorists have defined motivation in terms of responses elicited by stimuli or emitted in the presence of stimuli. From a cognitive perspective, motivation has been defined as the process of instigating and sustaining goal-directed behavior (Schunk, 2012). Three historical perspectives

on motivation have included the following: (a) drive theory, (b) conditioning theory, and (c) cognitive consistency theory.

Drive theory. Drive theory originated as a physiological theory. Woodworth (1918) defined “drives” as internal forces that sought to maintain homeostatic body balance. When an organism was deprived of an essential element, a drive was activated that caused the organism to respond; the drive subsided when the element was obtained. Hull (1943) broadened the concept of drive by postulating that physiological deficits were primary needs that instigated drives in order to reduce needs. Drive was the motivational force that energized and prompted organisms into action. Behavior that obtained reinforcement to satisfy a need resulted in drive reduction. This process started from need to drive, then, drive to behavior. Hull believed that innate behaviors satisfied primary needs, and learning occurred only when innate behaviors proved ineffective. Learning represented the organism’s adaptation to the environment to ensure survival. Despite this explanation, drive theory was not an ideal explanation for much of human motivation (Schunk, 2012). Needs have not always triggered drives oriented toward need reduction. Drive theory may have explained some behaviors directed toward immediate goals; however, many human behaviors have required long-term goals because people have not always been in a continuous high drive-state while pursuing long-term goals.

Conditioning theory. Another motivation theory is conditioning theory that describes motivation in terms of responses elicited by stimuli (Pavlov, 1928) or emitted in the presence of stimuli (Skinner, 1938). In the classical conditioning model, the motivational properties of an unconditioned stimulus (UCS) were transmitted to the conditioned stimulus (CS) through repeated pairing. Conditioning occurred when the CS elicited a conditioned response (CR) in the absence of the UCS. According to Schunk (2012), this was a passive view of motivation because it purported that once conditioning occurred, the CR would be elicited in the presence of the CS. Conditioning has not been viewed as an automatic process; instead, it has depended on information conveyed to the individual about the likelihood of the UCS occurring when the CS has been presented.

In operant conditioning, motivated behavior has been identified as an increased rate of responding. Skinner (1953) argued that internal processes that accompanied responses were not necessary to explain behavior. Individuals' immediate environment and their history needed to be examined for the causes of behavior. The concept of reinforcement was significant to understand people's actions, but it did not explain the effect of human belief. Bandura (1986) challenged this notion, stating that people engaged in activities because they believed they would be reinforced and valued that reinforcement. Without examining cognitive elements,

conditioning theory has offered an incomplete account of human motivation.

Cognitive consistency theory. The third historical perspective on motivation is the cognitive consistency theory that has posited motivation results from interactions of cognitions and behavior. Homeostatic is a key concept in this tradition. Cognitions and behaviors consistent have made problems solvable when tension has occurred among elements.

Two prominent subsets of cognitive consistency theory perspectives have included balance theory and dissonance theory. Heider's (1958) balance theory rationalized that a tendency existed to balance cognitively the relations among individuals, situations, and events. Any basic situation involved these three elements—individuals, situations, and events—and relations were either positive or negative. Festinger's (1954) cognitive dissonance claimed that individuals tried to maintain consistent relations among their beliefs, attitudes, opinions, and behaviors; however, relations of cognitions were consonant, irrelevant, or dissonant. Two cognitions were consonant if one followed from or fit with the other, yet many beliefs were deemed irrelevant to one another. Dissonant cognitions existed when one followed from the opposite of the other, yet dissonance theory has been weak because its notion has been vague and difficult to verify experimentally (Schunk, 2012).

The nature of motives has varied from theory to theory. However, motivation has been

explained as a source of human conduct. Self-regulation has been connected to one's present conduct based on motives related to a subsequent goal. In this sense, motivation has been intimately linked with self-regulation. People motivated to attain a goal have engaged in self-regulatory activities they believe will help them. As a result, self-regulation promotes learning, and the perception of greater competence sustains motivation and self-regulation to attain new goals (Schunk, 2012; Zimmerman, 2008).

Metacognition

Metacognitive monitoring emerged as a construct in the 1970s, stemming from writings on metaprocesses such as metamemory (Flavell, 1979). Flavell's writings on metacognitive monitoring set the stage for this construct by describing the developmental aspects of how one monitors or thinks about one's own cognition. Flavell forwarded the conceptual definition of metacognition as "thinking about thinking." He operationalized metacognition into four key areas: (a) metacognitive knowledge, (b) metacognitive experience, (c) goals, and (d) the activation of strategies. According to Flavell, the developmental process of metacognitive skills began to grow or decline via the interaction of these four components, particularly metacognitive experiences. At a broader level, the foundation of metacognition was in the mind of the individual. According to Flavell, metacognition dealt primarily with reflective abstraction of

new or existing cognitive structures. In this sense, metacognition emphasized learner development over learner-environment interactions.

After Flavell (1971) laid the contemporary foundations for conceptualizing metacognition, Baker and Brown (1984) separated metacognition into two distinct elements: knowledge about cognition (monitoring) and self-regulatory mechanisms that contain monitoring as a central focus. Baker and Brown found that the self-regulatory mechanisms included checking the outcome, planning, monitoring effectiveness, testing, revising, and evaluating strategies. The focus on strategic control processes was further developed into what some have called metacognitive control processes (Nelson, Leonesio, & Eagle, 1992). With the incorporation of self-regulatory metacognitive mechanisms, metacognition began to diverge gradually and to expand from Flavell's original conceptualization.

Social Cognitive Perspective

Bandura's (1986) book, *Social Foundations of Thought and Action*, heavily influenced contemporary self-regulation beliefs. Bandura's work helped shape the direction and development of self-regulation. Compared to the clearly cognitive orientation in metacognition, self-regulation initially emphasized behavioral and emotional regulation (Bandura, 1986, 1993). With Bandura's later writings on self-efficacy, motivation emerged as an additional regulatory

area.

As an overview, in *Social Learning Theory* Bandura (1977) discussed human learning and self-regulation using a triadic perspective. Although willpower theories were dominant in the history of education, Bandura suggested a triadic model of causation that posited a complex interplay between personal (cognitive-affective), behavioral, and environmental determinants. Through thoughts and actions, people were able to exert self-regulatory control over their level of functioning and the events in their lives. The act of self-regulation did not occur without the interaction of the person with the environment. Although these contextual factors may have played a smaller role than the personal processes, these interactions were critical to the self-regulation process. Bandura (1986) recommended teaching students how to self-regulate personal, behavioral, and environmental aspects of their lives through three essential self-management processes: (a) self-observation, (b) judgmental process, and (c) self-reactive influence rooted in personal standards. Self-observation referred to deliberate thinking and attention to aspects of one's behavior. Judgmental process referred to examining current performance level in terms of one's goal. Self-reactions included thinking about behavioral, cognitive, and affective responses to self-judgments. These three processes comprised self-regulation from the social cognitive perspective (Zimmerman, 2004). Educational programs that

addressed these three sub-functions of self-regulation have been highly effective in improving students' motivation and use of strategies for academic achievement (Schunk & Zimmerman, 1998).

The theoretical focus of social cognitive perspective diggers from metacognition, involving a type of exogenous constructivism (Moshman, 1982). Specifically, in *Social Learning Theory*, the emphasis was on the derivation of knowledge from the environment. Moreover, while the cognitive orientation of predecessor influenced Flavell and metacognitive researchers, Bandura (1986) and other self-regulation researchers, neo-behaviorists, took cues from more empiricist frameworks (Byrnes, 1992).

Since the publication of Bandura's (1986) classic volume, self-regulation theory has continued to develop. The emergence of self-regulation research in academic domains by Zimmerman and Schunk (2003; 2011) was one of the cases. Graham and Harris (1991) have provided a detailed analysis of self-regulation in their examination of self-regulated strategies in academic domains such as writing.

Development of the concept of self-regulation. Self-regulation has been a highly relevant topic to the science of the mind and human behavior. Researchers in social and personality psychology began publishing about the concept of self-regulation in the 1980s

(Bandura, 1986; Dweck, 1988). In the 1990s, it was expanded to various aspects and applications: (a) self-regulated learning, (b) self-control, and (c) self-management (Schunk & Zimmerman, 1994, 1996, 2008).

Theorists in different areas of psychology defined self-regulation according to its principal components and interrelated processes. In health behavior psychology, self-regulation was defined as a sequence of actions and steering processes to attain personal goals (Maes & Gebhardt, 2000). Within personal psychology, researchers conceptualized self-regulation as a generic umbrella term for the set of processes and behaviors that supported the pursuit of personal goals within a changing external environment (Matthews, Schwean, Campbell, Saklofske, & Mohamed, 2000).

On the other hand, Orange (1999) postulated the complexity of self-regulation as a multidimensional construct. Therefore, measuring and teaching self-regulation posed problems. In addition, Zusho and Edwards (2011) suggested a similar definition of self-regulated learning as an active, constructive process whereby learners set goals for their learning and then attempted to monitor, regulate, and control their cognition, motivation, and behavior. Learners' goals and the various contextual features in their environment guided and contained self-regulated strategies. Although self-regulation research has been addressed in different areas of

psychology, there has not been an established coherent understanding of self-regulation (Zimmerman, 2008).

In light of various perspectives, the articles studied in this literature review supported the view of “self-regulation as a systematic process of human behavior that involves setting personal goals and steering behavior toward the achievement of established goals” (Zeidner, Boekaerts, & Pintrich, 2000, p. 751). From a social-cognitive perspective, self-regulation has been conceptualized in terms of a multi-phase process in which self-generated thoughts, affects, and actions are planned and adapted to attain personal goals (Zimmerman, 2008).

More specifically, Bandura (1986) postulated a certain concept regarding the three sub-functions of self-regulation in a triadic model: the interaction of personal, behavioral, and environmental factors. This is a cyclical process; therefore, these factors typically change during learning and have to be monitored (Bandura, 1986; Schunk & Zimmerman, 1994). Such monitoring has led to changes in an individual’s strategies, cognitions, affects, and behaviors. Learning, therefore, has been viewed as an open-ended process that requires cyclical activity on the part of the learner.

Zimmerman and Schunk (2011) encapsulated this cyclical nature using the three-phase self-regulation model: (a) forethought, (b) performance or volitional control, and (c) self-

reflections. First, the forethought phase referred to influential processes and beliefs that preceded efforts to learn and set the stage for such learning. Five types of forethought processes and beliefs have been studied in research on academic self-regulation: (a) goal setting (Locke & Latham, 1990), (b) strategic planning (Zimmerman & Martinez-Pons, 1992), (c) self-efficacy (Bandura, 1986), (d) goal orientation (Ames, 1992), and (e) intrinsic interest (Deci, 1975). Social cognitive theorists postulated that students entered learning situations with goals and varying degrees of self-efficacy for attaining them.

Second, the performance or volitional control phase involved processes that occurred during learning efforts and affected concentration and performance. During performance control, students implemented learning strategies that affected motivation and learning. Three types of performance or volitional control processes have been studied in research on academic self-regulation: (a) attention focusing (Corno, 1993), (b) self-instruction (Schunk, 1982), and (c) self-monitoring (Winne, 1995).

The final phase of the self-regulation model, the self-reflection phase, involved processes that occurred after a learning encounter and influenced a learner's reaction to that experience. Thereafter, these self-reflections influenced forethought regarding subsequent learning efforts. Four types of self-reflection processes have been studied in research on academic self-regulation:

(a) self-evaluation (Festinger, 1954), (b) attributions (Weiner, 1979), (c) self-reactions (Zimmerman & Kitsantas, 1997), and (d) adaptation processes (Dweck, 1988; Zimmerman & Kitsantas, 1997).

Reflecting a cyclical nature of self-regulated learning from a social cognitive perspective, Pintrich and Zusho (2002) suggested a model of student academic motivation and self-regulation in the college classroom. In this model, they assumed that the motivational and self-regulatory processes mediated the effects of personal and contextual factors on student outcomes. This model focused on comprehending the psychological mediators of motivation, cognition, and self-regulation and how they were connected to personal characteristics and outcomes.

There have been four different areas of regulation that learners have attempted to monitor, control, and regulate and that have enabled them to adjust actions and goals to achieve desired results in light of changing environmental conditions (Pintrich & Zusho, 2002). The common elements in self-regulation studies have been cognitive, motivational, behavioral, and contextual components. The first three elements of cognition, motivation/affect, and behavior have demonstrated the traditional three divisions of different areas of psychological functioning (Snow, Corno, & Jackson, 1996). While an individual may have tried to regulate these three areas, other individuals or contextual features have potentially influenced an individual's attempts to self-

regulate his or her learning (Pintrich & Zusho). These attempts to control were self-regulated in that the individual focused on trying to control or to regulate his or her own cognition, motivation, or behaviors. At the same time, the individual may have found direction pertaining to what, how, and when to perform a task.

The cognitive component included the different cognitive and metacognitive strategies that individuals used to learn and perform a task or to control and regulate their cognition. While learners could regulate their cognition, they also regulated their motivation and affect. The second component of motivation and affect concerned the activation and control of various motivational beliefs such as self-efficacy beliefs, goal orientation, and values for the task.

The third component of behavior referred to individual effort on a task as well as persistence, help-seeking, and choice behaviors. In the triadic model of social cognition (Bandura, 1986; Zimmerman, 2008), behavior was an aspect of the person because individuals could observe their own behavior, monitor it, and attempt to control and regulate it. These activities were considered self-regulatory for the individual.

Although some models of self-regulation (Sweller, van Merriënboer, & Paas, 1998; Winne & Hadwin, 1998) excluded the contextual component because it did not reflect aspects of the individual, in the social cognitive model, monitoring and controlling the environment was a

significant aspect of self-regulated learning. It was important because the focus was on the personal self engaged in these activities. It was the active and personal self who attempted to monitor, control, and regulate the context (Pintrich & Zusho, 2002).

Pintrich and Zusho (2002) suggested a social cognitive conceptual framework, emphasizing the importance of motivational processes to self-regulation. Motivational variables interacted with cognitive, behavioral, and contextual factors to influence self-regulation. Researchers (Bandura, 1995; Corno, 1993; Weiner, 1979; Zimmerman & Martinez-Pons, 1986) revealed that good and poor self-regulators differed in several motivational processes: (a) motivational planning and activation, (b) motivational monitoring, (c) motivational control and regulation, and (d) motivational reaction and reflection (Pintrich & Zusho, 2002).

Self-regulated students were also more self-efficacious learners. They believed they were capable of using their self-regulatory skills in learning situations (Zimmerman & Kitsantas, 2005). When self-regulated learners compared progress against goals, they self-evaluated. These self-evaluative judgments supported their self-efficacy for learning and motivated them to keep going. Self-regulators attributed success to ability and effort, whereas they attributed difficulty to the use of inappropriate strategies. This was the way self-regulators used attributions through self-regulated processes (Pintrich, 2000). Research has identified self-

regulatory benefits of mastery-approach goals. Students with a mastery orientation showed better cognitive monitoring and use of learning strategies (Pintrich).

Research has also shown that interest and value relate to self-regulation. Adaptive self-regulatory strategies were in use when students had greater personal interest in a topic and viewed the activity as valuable (Pintrich & Zusho, 2002). The Pintrich (2000) model and research supported the hypothesized links among learning, motivation, and self-regulation. It is reasonable to suggest that students who utilized more adaptive self-regulatory strategies demonstrated better learning and higher motivation for learning.

Observational learning through modeling. Social cognitive theory has distinguished learning from performance of previously learned behaviors in that modeling has referred to cognitive, affective, and behavioral changes derived from observing models. By observing models, individuals acquired knowledge that they may not have been able to demonstrate at the time of learning (Schunk, 2012). Bandura (1986) stated that modeling served different functions: (a) observational learning, which was the acquisition of new behaviors; (b) inhibition/disinhibition, which was the strengthening or weakening of behavioral inhibition; and (c) response facilitation, which was the performance of previously learned behaviors due to prompting.

Observational learning through modeling occurred when observers displayed new behaviors that prior to modeling had zero probability of occurrence. Inhibition/disinhibition occurred when observing a model strengthened or weakened inhibitions. Response facilitation occurred when modeled actions served as social prompts for observers to behave accordingly. Modeling did not occur automatically when observers and models were paired. Observers had to attend to models and be motivated to learn from them.

Certain model characteristics that were influential on modeling were competence, perceived similarity, credibility, and enthusiasm (Pintrich & Schunk, 2002). First, competence was crucial to observational learning because students tended to follow models who performed successfully rather than those who performed less competently. The second characteristic was perceived similarity. According to Bandura (1986) an observer's perceived similarity to a model constituted an important source of motivation. Some studies (Bandura, 1986; Schunk, 1987) showed that when observers and models had similarities, observers were likely to take actions socially appropriate and produce comparable results. The third characteristic, model credibility, affected the observers' motivation to imitate actions. Models who demonstrated consistency between their behaviors and words were more likely to be judged by observers as credible and to be emulated. On the other hand, observers did not follow models who exhibited inconsistency,

displaying one action but behaving differently (Bandura, 1986). The last characteristic was model enthusiasm. Models with enthusiasm were more likely to affect observers' learning and motivational processes than less enthusiastic models (Perry & Penner, 1990).

One particular aspect of modeling showed the importance of copying models who gradually overcame difficulties through perseverant effort (Kitsantas et al., 2000). These models had more impact on peers than mastery models who had smooth performance. Peer modeling by knowledgeable classmates was more effective than teacher modeling because students built higher efficacy and cognitive competencies (Schunk, 1987). Zimmerman and Schunk (2003) challenged researchers of instruction to study how, when, and where to structure these interactions. This was one of the significant areas that the researcher in this study addressed.

Academic self-regulation. The increased focus on self-regulation in academic settings appears to have directly contributed to the emergence of a new term: self-regulated learning. Self-regulated learning emerged in the 1980s and gained prominence in the 1990s, just as the work on hypermedia became a growing presence in the educational literature. The developmental path of self-regulated learning has been different from the trajectories of metacognition and self-regulation. Specifically, while metacognition and self-regulation developed in parallel with little observable cross-fertilization, most models of self-regulated

learning incorporate aspects of both metacognition and self-regulation to shape the lens on learner monitoring. Theorists initially posited self-regulated learning as an integrated theory of learning (Corno and Mandinach, 1983) and deliberately attempted to address the interaction of cognitive, motivational, and contextual factors rather than their isolated contributions. Unlike the beginnings of metacognition and self-regulation, the regulatory focus was relatively broad.

Zimmerman and Schunk (2011) defined academic self-regulation as the self-directive process through which learners transform their mental abilities into academic skills. It referred to the degree that individuals were metacognitively, motivationally, and behaviorally active participants in their own learning process (Zimmerman). It was not a mental ability (intelligence) or an academic skill (reading proficiency). Supporting Zimmerman, Orange (1999) summarized various definitions of academic self-regulation as the willingness and ability to manage or to direct one's learning with the use of appropriate strategies and attitudes. Those efforts helped students to sustain goal-directed behaviors and seek assistance when necessary.

How do personal, social, and environmental factors interact to lead students to become skillful rather than naive self-regulators of their academic learning? Zimmerman (2011) suggested a social cognitive model of self-regulatory development with four levels: (a) observational level, (b) emulation level, (c) self-control level, and (d) self-regulatory level. A

cyclical nature of personal, behavioral, and environmental factors worked at all levels of self-regulatory development (Schunk & Zimmerman, 2008). The researchers clarified that this was not a stage model, and learners did not always develop their academic self-regulatory skills following this model, especially those self-regulated learners who did not have opportunities to encounter good models but still put forth effort to learn.

When developing an academic skill at an observational level, learners needed to watch carefully a social model learn or perform. This led learners to differentiate the correct form of the skill from a model's performance and descriptions. Repeated observation across task variations was necessary at this level (Rosenthal & Zimmerman, 1976). Perceptions of personal similarity to a model increased the impact of consequences (Brown & Inouye, 1978). As mentioned earlier, studies by Bandura (1986) and Schunk (1987) supported the importance of model similarity.

When a learner duplicated the general form of a model's response on a correspondent task, the second level called emulation was reached. Learners needed to actually perform the skill so it became a behavioral reality. Individualized modeling and social support facilitated the improvement of emulation (Bandura, 1986). Both observational and emulation levels were social in nature since learners needed contact with their models.

Automaticity has been the salient behavioral sign of third level attainment: a self-controlled level of self-regulatory skill (Zimmerman & Kitsantas, 1999). Even though regulation of a skill became internalized at this level, learners were still dependent on a representation of an external model's standard. At the fourth level, a self-regulated level of task skill, learners improved their abilities to make adjustments in their skills in unstructured settings involving personal and contextual conditions. Since the skill had become automatized at the third level, their attentions were then focused toward performance outcomes. Although social support was systematically reduced as learners developed their own distinctive ways of performing, they still needed social resources on a self-initiated basis (Murray, 1991).

Steinberg (1996) has examined out-of-school influences on academic learning. His research concluded that parents of high-achieving students had strong expectations regarding high grades and monitored their children closely. Newman (1990) has shown that high-achieving students also sought help from teachers and peers more often and more effectively than low achievers. Despite the misconception that high-achieving students were socially isolated, they self-regulated and relied on others when they needed information and support (Newman, 1994). In addition, Ruban (2006) and others (Risemberg & Zimmerman, 1992; Zimmerman & Martinez-Pons, 1990) found that differences existed in academic self-regulation

and motivation, such as the use of self-regulatory strategies and the possession of self-regulatory deficiencies among low- and high-achieving students. According to Zimmerman (1998a) not only students, but also professionals, including writers, musicians, and athletes, engaged in time management activities in order to attain their goals. These individuals regulated their own overt behavior. In a triadic social cognitive model, individuals observed their behavior, monitored it, and attempted to control and regulate it; therefore, it was self-regulatory for the individual.

These studies showed that there was a strong relationship between low- and high-achievers' use of study skills, learning strategies, and their academic achievement (Schunk & Zimmerman, 1998). Students motivated to attain a goal engaged in self-regulatory activities. In succession, self-regulation promoted learning, and the perception of greater competence sustained motivation and self-regulation to attain goals (Schunk, 2012; Zimmerman, 2008).

Gender. In addition to the discussion of cognitive, metacognitive, and motivational features of self-regulated learners, Pintrich and Zusho (2002) mentioned gender difference in the context of academic self-regulation. Social cognitive theory asserted a learner's success or failure was due to an underpinning interaction between oneself and his or her behaviors based on his or her perception of teacher and peer receptivity (Bandura, 1986; Zimmerman & Schunk, 2011). It also asserted that one's academic goals changed through self-reflection by undertaking

tasks to improve one's achievement. Therefore, environment intermixed with students' self-perceptions played a noteworthy function in productive pursuit of and determination in academic accomplishment.

In addition self-efficacy was related to a multitude of motivational, cognitive, and behavioral learning hypotheses, which in turn were related to academic achievement (DiBenedetto & Bembenutty, 2011; Dibenedetto & Zimmerman, 2010). The major ways in which gender influenced learning and performance were through the differing self-efficacy beliefs held by males and females for academic tasks and self-regulated learning (Bussey & Bandura, 1999; Eccles & Wigfield, 2002; Usher & Pajares, 2008).

To summarize, few studies exist with conclusive evidence regarding gender differences in college students' self-regulated learning. Research on younger pre-collegiate students has found mixed results. Though Zimmerman and Martinez-Pons (1990) reported that female students showed higher levels of self-regulated learning, males were also likely to self-regulate their learning (Meece, Anderman, & Anderman, 2006). More research is needed before definitive conclusions can be drawn about gender differences in the self-regulation process for college students.

The following section presents and critiques empirical research related to academic self-

regulation in the context of higher education. The first section focuses on empirical studies relating to academic self-regulation. The second section focuses on gender differences, and the final section focuses on research that evaluates the teaching of self-regulated learning. The empirical evidence in the section includes numerous quantitative international studies and a few qualitative studies.

Empirical Studies Related to Academic Self-Regulation

Self-regulated learning has been an emerging area of research on student performance and achievement in classroom settings as well as in students' future direction and professional success. Research in this area has included academic self-regulation, self-regulated learning strategies, and motivation of college students. Academic self-regulation has become a key variable in explaining academic and professional success (Bandura, 1995).

The study of Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) revealed that a key self-determination concept regarding students' self-regulation is autonomous self-regulation.

The results of the study showed that students initiate and persist because they can select learning tasks that are appealing or personally important to them. Students who had been induced to adopt an intrinsic goal displayed greater persistence and deeper learning than students who adopted an extrinsic goal. These measures of autonomous learning are linked causally to

students' intrinsic motives.

Michou, Vansteenkiste, Mouratidis, and Lens (2014) extended the previous study (Vansteenkiste et al., 2004) and tested 35 male and 400 female university students at a large Greek university of education on the mediating role of autonomous and controlling reasons underlying the separate achievement goals: dominant achievement goal, underlying reasons of achievement goals, motivated learning strategies, and cheating. It was a correlational design and the hypotheses were tested via path modeling. Michou et al. examined the learners by dividing them according to their dominant goal choice to see if there was substantial variation in the autonomous and controlling reasons underlying learners' dominant achievement goals and whether these reasons accounted for the relation between the distal achievement motives, learning strategies, and cheating.

Participants completed the questionnaires during a regular class hour. The researchers used the short Achievement Motivation Scale (AMS; Lang & Fries, 2006) to assess achievement motivation. The revised Achievement Goal Questionnaire (Elliot & Murayama, 2008) was the instrument used to assess achievement goals. The researchers also asked participants to indicate to what extent they pursued each of the nine achievement goals based on these underlying reasons to access achievement goals: (a) intrinsic reasons, (b) identified reasons, (c) introjected

reasons, and (d) external reasons to assess underlying reasons of achievement goals. In order to evaluate cheating behaviors and cheating beliefs, students completed Anderman, Griesinger, and Westerfiels's (1998) scale. Finally, the students completed one part of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991) in order to assess three aspects of students' learning strategies: (a) critical thinking, (b) metacognitive self-regulation, and (c) effort regulation.

The analyses conducted included a path analysis with EQS 6.1 software to test the mediating role of autonomous and controlling reasons underlying the pursuit of the dominant goal between the distal achievement motives and study-related outcomes. The results showed a positive relationship between need for achievement and autonomous reasons. In turn, autonomous reasons were positively associated with metacognitive self-regulation and effort regulation but not with critical thinking. Additionally, a direct positive relation was observed between need for achievement, critical thinking, and metacognitive self-regulation. In contrast, fear of failure was unrelated with autonomous reasons and positively correlated with controlling reasons for pursuing dominant goals which were associated negatively to effort regulation. Finally, a direct positive path was found between fear of failure and cheating, whereas a direct negative path linked fear of failure to critical thinking. A test of indirect effects showed that need

for achievement was indirectly positively associated with effort regulation ($B = .05, z = -3.08, p < .01$) and metacognitive self-regulation ($B = .05, z = 3.15, p < .01$) but negatively associated with cheating ($B = -.06, z = -3.29, p < .01$) by means of underlying autonomous reasons. In contrast, fear of failure was indirectly negatively associated, although marginally, with effort regulation ($B = -.02, z = -1.96, p = .05$) by means of underlying controlling reasons.

Autonomous and controlling reasons underlying the pursuit of achievement goals mediated, respectively, the relation of need for achievement and fear of failure to aspects of learning outcomes. In conclusion, autonomous and controlling reasons underlying achievement goals could further explain learners' functioning in achievement settings.

There was a strong relationship between low and high achievers' use of study skills and learning strategies and their academic achievement (Schunk & Zimmerman, 1994). Gifted students or high-achieving students often possessed adaptive self-regulatory methods in abundance that helped them succeed in academic settings (Risemberg & Zimmerman, 1992; Zimmerman, 1998b). Researchers also showed that an influential reason for students' academic learning difficulties was their insufficient ability to self-regulate learning and academic behaviors effectively (Schunk & Zimmerman, 1994, 1998). Specifically, in terms of college students, Ruban (2006) examined patterns of self-regulated learning strategy use and the possibilities of

distinguishing identifiable patterns of self-regulatory strategy use by low achievers and high achievers. Extending the work of Dweck (1988) and Pintrich and Maehr (2002), Ruban found strategies representing both deep processing and surface processing. In general, strategy categories reported by the students in this study were similar to those reported by Zimmerman and Martinez-Pons (1988). This study also found several differences in self-regulatory strategy use among low-achieving and high-achieving students. High achievers appeared to exhibit an enhancement model of learning, whereas low achievers tended to demonstrate a survival model of learning. This meant a pattern of differences existed in the level of complexity of learning strategies used by low-achieving and high-achieving students. The results from this study indicated the importance of teaching college students effective study methods and learning strategies to help them succeed academically.

Koestner, Taylor, Losier, and Fichman (2010) conducted a longitudinal study examining the relation between academic self-regulation and French-Canadian female college students' adaptation to graduation. Self-regulation concerns the integration of social values and guidelines into personal values. One hundred and four women were recruited through the students' newspaper. Participants completed a package of questionnaires concerning students' college experiences, as well as scales to assess intrinsic motivation, self-regulation, career exploration,

optimism, and depression. Results showed that self-regulation in the academic domain was significantly related to lower levels of depressive symptoms over a year and that this relation was equally strong regardless of whether students continued in college or had graduated. Self-regulation figures more prominently in predicting positive adjustment outcomes than intrinsic motivation.

Although academic procrastination has been an indicator of identified motivation, academic delay of gratification has been associated with students' use of volitional strategies, expected grade, self-efficacy beliefs, and academic performance (Bembenutty, 2011).

Bembenutty (2007) studied the relationship between Korean students' motivation for learning, the use of self-regulation of learning strategies, and the delay of gratification at a large rural Korean university. Participants (61 males and 74 females) completed three instruments: Academic Delay of Gratification Scale, the Motivated Strategies for Learning Questionnaire (MSLQ), and Academic Volitional Strategy Inventory (AVSI). The researcher also used final course grade as a dependent variable. The results suggested there was a solid association between academic delay of gratification and students' use of volitional strategies, expected grade, self-efficacy beliefs, and academic performance.

Extending the previous study Bembenutty (2009) studied the associations between 250

American college students' use of self-regulatory strategies, expectancy-value, and delay of gratification. An analysis of covariance was conducted to examine the effects of motivational determinants and students' use of self-regulatory strategies on delay of gratification after controlling for gender. Then, hierarchical regression analysis were performed to examine the unique role of gender, motivational determinants, and students' use of self-regulatory strategies as predictor of delay of gratification. Results showed that perception of effort and the perceived importance of the delay of gratification exhibited main effects on students' reported willingness to delay gratification. An interaction effect was found between gender and stress-reducing strategies on delay of gratification. This study supported Mischel's (1996) self-regulatory view of delay of gratification and the perspective that links motivational and strategic factors in self-regulation.

The metacognitive concept as a subordinate component to self-regulated learning (Muis & Franco, 2010; Veenman, Van Hout-Wolters, & Afflerbach, 2006) is critical in constructivist views of learning. Numerous studies showed a positive relationship between students' academic performances and metacognition (Pintrich & De Groot, 1990; Veenman et al., 2006; Winne & Hadwin, 2008). Moreover, many researchers reported that metacognitive and motivational variables were positively related (Pintrich, 2003). Motivated students were likely to use a variety

of cognitive and metacognitive strategies and were more effective in their effort regulation.

Berger and Karabenick (2011) found proof for the relatedness between students' motivation and use of learning strategies. There were no reciprocal effects, but rather unidirectional effects between the two constructs; motivation predicted the use of learning strategies, but the use of learning strategies did not predict motivation. Vrieling, Bastiaens, and Stijnen (2012) extended the finding of Berger and Karabenick, and measured dynamics of student teachers' use of metacognitive learning skills and motivation for learning in learning environments with increased self-regulated learning opportunities. The results showed that student teachers' use of metacognitive skills increased significantly in learning environments with increased self-regulated learning opportunities for two of the three participating teacher educators.

Empirical Studies Related to Gender Difference in Self-Regulated Learning

Self-regulatory skills do not develop and mature in a vacuum. Children are more likely to acquire skills valued by society and those they believe they are able to master. Socially valued pursuits in the academic domain are heavily influenced by a student's gender (Zimmerman & Schunk, 2011). Britner and Pajares (2006) studied the impact of children's gender stereotypic conceptions and self-beliefs on performance. Social influences that promote children's

development of self-regulated learning and self-efficacy beliefs abound. Many of these social influences covary with students' gender.

Despite voluminous research on the development of academic self-regulation and gender for children, few studies have examined psychological aspects of gender differences in self-regulated learning of college students. Some studies (Ablard & Lipschultz, 1998; Bembenuddy, 2009; Bouffard, Boisvert & Laraouche, 1995; Meece et al., 2006; Vogt, 2005) included gender differences with respect to academic self-regulation. These studies were developed based on social cognitive theory.

An early study on elementary students' self-regulated learning and gender by Zimmerman and Martinez-Pons (1990) examined gender and elementary students' self-regulated learning utilizing the Self-Regulated Learning Interview Schedule (SRLIS; Zimmerman & Martinez-Pons, 1986) with 14 self-regulated learning strategies. They examined gender difference among gifted students ($N = 90$) from grades 5, 8, and 11 and their feelings of self-efficacy. In this study girls reported better use of self-regulated learning strategies than boys. This study found three specific features regarding self-regulated learning strategies. First of all, girls displayed more goal setting and planning strategies than boys; the means were 1.88 and 1.56, respectively. Second, girls kept records and monitored their progress more frequently than boys; the means

were 2.04 and 1.50, respectively. Third, girls used environmental structuring strategies more heavily than boys; the means were 0.74 and 0.55, respectively. The researchers concluded that their data demonstrated that girls were greater users of strategies but less self-efficacious than boys.

Ablard and Lipshultz (1998) also studied a pre-collegiate group ($N = 222$) of seventh grade high-achieving students with the use of the SRLIS. Their focus was the relationship between self-regulated learning, achievement goals, and gender. They concluded that gender was significantly related to achievement goals.

One particular study on college students' self-regulated learning and gender by Bouffard, Boisvert, Vezeau, and Larouche (1995) investigated the impact of achievement goal orientations on self-regulated learning strategy use and academic performance among Canadian college students ($N = 702$). The results showed that female students showed a strong mastery goal orientation and used more self-regulated learning strategies than male students, regardless of goal orientation. Mastery goal orientation, cognitive strategy use, metacognitive strategy use, motivation, and academic performance were positively related for males and females. For females the performance goal orientation was only related to academic performance, and for males the performance goal orientation was positively related to metacognitive strategy use,

motivation, and overall academic performance.

Jakubowski and Dembo (2002) examined the relationships among academic achievement, academic self-regulation, and four social cognitive characteristics: (a) self-efficacy, (b) anxiety, (c) identity style, and (d) stage of change. Participants were 210 college students enrolled in a learning and study strategies course at a private research university. Analyses of variance were conducted to determine if either of the categorical demographic variables, gender or ethnicity, were significantly related to self-regulation or the measures of achievement. Gender was significantly related to the grade earned in the course with females earning significantly more points than males, having significantly higher GPAs than males, and having higher self-regulation scores than males. Ethnicity was not significantly related to self-regulation, to the grade in the course, or to the grade point average.

In another study Vogt, Hocevar, and Hagedorn (2007) hypothesized that environment coupled with a woman's self-perception had a noteworthy role in her successful quest and persistence in engineering. The framework for this study followed Bandura's triadic model of the effect of one's environment on self and behavioral variables; this was studied in the context of gender within the academic progress of students in engineering programs. The researchers had two hypotheses: (a) discrimination would have a negative effect on a student's perception of

self and related achievement behaviors, and (b) academic integration would have a positive relationship with self-variables and achievement behavioral variables. Research questions focused on which variables were accountable for females' performance in engineering and were measured using GPA. Also, the study explored to what extent any findings for males differed from females.

The participants ($N = 713$, males = 409; females = 304), who were enrolled in similar academic institutions labeled as highly ranked West Coast research universities, were invited to participate in a voluntary survey. Various statistical procedures were conducted in order to test social cognitive constructs, similar to the ones used in this study. Data validated the claim of Bandura (1986) that focused on the significance of augmenting students' academic self-efficacy. With regard to self-regulation and gender, women in this study showed greater application of academic self-regulation behaviors related to school achievement. Specifically, women exercised more effort in their studies in engineering because they sought help if needed. Regarding academic integration, the results showed there was no gender difference. Concerning gender gap in engineering achievement and self-regulation, the results were positive.

Another element of self-regulated learning includes academic delay of gratification where students must decide whether to focus their effort on a learning activity or opt out for more

attractive options (Pintrich, 2000). Using a correlational study, Bembenutty (2007) examined individual difference such as gender and ethnicity among college students. The researcher studied the relationships between academic performance, self-regulation, motivation, and delay of gratification. This study also used multivariate and univariate analyses of variance in order to investigate whether students from diverse gender and ethnic groups differed with regard to their use of self-regulation, motivation, delay of gratification, and academic performance. The sample included 364 college students who enrolled in introductory psychology courses in a public university. There was a positive correlation for Caucasian students, but not for minority students regarding the association between final course grades and academic delay of gratification. It was notable that the reported self-efficacy beliefs of all groups of students (Caucasian males, minority males, Caucasian females, minority females) moderately to highly correlated with grades. The results also suggested that, independent of gender or ethnicity, a student's evaluation of the importance and usefulness of the course task was related to his or her achievement in the class.

As cited in the previous section, Bembenutty (2009) extended a 2007 study and focused on delay of gratification from the perspective of motivation and self-regulation. Results indicated that perception of effort and the perceived value of the delay of gratification revealed

main effects regarding students' reported willingness to delay gratification. Additionally, an interaction effect was observed between stress-reducing strategies and gender on delay of gratification. Also, hierarchical regression analyses were performed to evaluate the unique contribution of each independent variable while controlling for other independent variables. In Step 1 and Step 2, the significant predictor of delay of gratification was gender ($\beta = .20$, $\beta = .17$); in Step 3 gender no longer was a significant predictor of delay of gratification ($\beta = .11$); however, a significant positive predictor of delayed gratification continued ($\beta = .36$), whereas a significant negative predictor of delayed gratification was effort ($\beta = -.15$).

DiBenedetto and Bembenuddy (2011) studied the association between science achievement and self-regulated learning. The participants from an urban college in New York included 57 undergraduate college students (24 males; 33 females) in biology courses. Gender was the focus of two research questions, one of which investigated whether gender moderated the effects of self-regulation, self-efficacy, and delay of gratification on students' academic performance. The focus of the study was to measure the main effects and interactions between gender and other variables. The results from an ANOVA showed only a significant main effect for self-efficacy, $F = 4.66$, $p = .36$, with larger effect for females. No significant main effects or interactions with other variables were found.

The second question examined whether each of the variables—gender, self-regulation, self-efficacy, and delay of gratification—accounted uniquely for the variance in the students' final course grades after controlling for the effect of the other variables. The results of a regression analysis showed that gender ($\beta = .04, p = .755$) and self-regulation ($\beta = .10, p = .575$) were not predictors of final course grade in the initial model. In the final model, however, when self-efficacy was entered in Step 1, it was a significant predictor of final course grade ($\beta = .28, p = .030$). When delay of gratification was added in Step 2, self-efficacy ($\beta = .23, p = .071$) and delay of gratification ($\beta = .25, p = .051$) were marginal predictors of final course grades.

In summary, Pintrich and Zusho (2002) observed that the relationship between gender differences and self-regulation is inconclusive. However, differing self-efficacy beliefs in males and females regarding academic tasks and self-regulated learning has shown gender differences affect learning and performance (Bussey, 2011).

Empirical Studies Related to Teaching Self-Regulation in Learning

Self-regulated learning in the academic context is a significant concern for educators in higher education since learning occurs effectively if students are academically self-regulated. Furthermore, self-regulation in learning can offer a useful conceptual framework for both

students and educators toward the educational goal of students becoming lifelong learners. Self-regulated learners become independent in their learning and thus control their own learning.

Self-regulation entails students who plan their actions, set goals, manage time, and use a variety of strategies in accomplishing a task.

Can educators teach self-regulation for learning? Zimmerman and Schunk (2003, 2011) showed when self-regulation was taught to students, it increased their motivation and achievement. Self-regulation can be taught through modeling by parents, teachers, coaches, and peers; however, many researches tend to focus on its conceptualization and factors. Therefore, there is a need for research to propose effective strategies on how to teach students to self-regulate. The following studies support the argument of this study and demonstrate how to translate self-regulation into actual teaching practice. The next section summarizes the work of Azevedo and Cromley (2004), Dembo (2002, 2004), Pintrich (2000, 2003), Kitsantas and Zimmerman (2009).

The study by Azevedo and Cromley (2004) examined the effectiveness of self-regulated learning (SRL) training in facilitating college students' learning with hypermedia. Training included planning, monitoring, strategies, task difficulty and demands, and interest. One hundred thirty-one undergraduate students (96 women and 35 men) were randomly assigned to

either a training condition or a control condition where they used a hypermedia environment to learn about the circulatory system. While the control group received no training, the researchers spent 30 minutes training each student in the self-regulation group on the use of specific, empirically based self-regulation variables designed to foster their conceptual understanding. Pretest, posttest, and verbal protocol data were collected from both groups.

The results showed that training students to self-regulate their learning led to a significant increase in their understanding of the circulatory system with a significant main effect of time and a significant interaction between condition and time. Chi-square revealed that verbal protocols provided evidence that learners who received SRL training effectively deployed the key SRL processes and mechanisms that led to significant shifts in their mental models. This study confirmed that scaffolding practices improved college students' use of valuable self-regulated learning skills during hypermedia activities. The study also revealed that the adaptive scaffolding condition produced greater understanding of the circulatory system.

Azevedo et al. (2011) extended the previous study and researched the effect of learning independently and externally aided learning on the mental model shifts of college students, including using self-regulation within the learning process during the teaching sessions. The focus was mainly on how a human tutor influenced the self-regulatory processes in certain

classes.

Seventy-four undergraduate students from the University of Maryland took part in this study during the fall semester of 2003 and the spring semester of 2004. The design included a pretest and posttest with the goal of measuring learning gains. All participants had low prior knowledge of the circulatory system according to a pretest that was given. During the learning sessions on hypermedia, concurrent think-aloud data were gathered based on the study of Azevedo (2005). The results showed there were differences between externally assisted learning and independent learning in self-regulated learning processes. This was true within time intervals across a session. Also, it was valid for class transitions during a session on self-regulated learning processes. This study aided in the understanding of how learners can optimize open learning environments.

The study by Jakubowski and Dembo (2002) described an educational intervention based on a social cognitive approach to help students become self-regulated learners. As the social cognitive perspective views self-regulation as an interaction of personal, behavioral, and environmental triadic processes (Bandura, 1986), the “learning to learn” course at the University of Southern California was composed of six components of self-regulatory skills identified by Zimmerman and Risemberg (1997). These self-regulatory skills included motives methods of

learning, use of time, control of physical and social environment, and evaluation of one's performance. The course included four-semester credit hours with two hours of lecture and two hours in a laboratory. In lectures professors taught principles, concepts, and research findings in cognitive psychology and motivation. In the laboratory, groups of 20-25 students met with graduate teaching assistants. The laboratory session was designed to integrate theory and practice.

This course started with the Learning and Study Skills Inventory (LASSI) (Weinstein, Palmer, & Schulte, 1987) and included two exams, 12 quizzes, homework assignments, and a journal to describe their successes and failures in applying the strategies. At the end of the semester, the students wrote a self-management paper evaluating the effectiveness of the strategy they learned. A pretest and posttest questionnaire assessed students' self-efficacy, anxiety, and self-regulation. Self-efficacy was measured by the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1991) and anxiety was measured by the 8-item subscale from the LASSI (Weinstein et al., 1987). Self-regulation was measured using 24 items from the Dynamic and Active Learning Inventory (DALI) (Iran-Nejad & Chissom, 1992).

The results were unexpected because there was a significant decrease in self-regulation

and self-efficacy scores and a significant increase in anxiety scores. The letter grade in the course was not related to any of these changes. During the course females demonstrated a significant increase in self-efficacy scores while males decreased their self-efficacy. Ethnicity was not related to any of the changes.

Researchers looked at the data carefully and found there were considerable differences in the evaluation of the two professors teaching the course. There was a difference between the students taught by the tenured faculty member and the part-time faculty member. The students in the class with a tenured faculty member showed increases in self-regulation and self-efficacy scores, whereas students in the section taught by the part-time faculty member demonstrated decreases in the two scores. Students in both sections increased in their anxiety scores.

These results are possibly explained by the problem of transfer of training, which has been identified as a major problem in teaching learning strategies (Hattie, Biggs, & Purdie, 1996; Hofer, Yu, & Pintrich, 1998). Zimmerman's (2000) cyclical phases and sub-processes of self-regulation are the second possible explanation of problems in self-regulation and the increase in anxiety for the students.

Dembo & Seli's study (2004) identified several reasons why students had difficulty changing their behavior. Dembo used the framework of Prochaska and Prochaska (1999) to

identify the reasons: (a) They believed they could not change, (b) They did not want to change, (c) They did not know what to change, or (d) They did not know how to change. Dembo linked these reasons with major learning and motivational variables and processes such as automaticity of behavior, level of self-efficacy, nature of attributions, type of goal orientation, problems in self-observation and evaluation, negative self-talk, and problems in the transfer of learning.

These problems have been related to what has been called the skill and the will by VanderStoep & Pintrich (2008) and Dembo and Seli (2004, 2008). Problems such as automaticity of behavior and the transfer of strategies from one course to another may have been related to issues in learning. On the other hand, the level of self-efficacy; nature of attributions; type of goal orientation; and problems of self-observation, evaluation, and negative self-talk were related to issues in motivation. Educators need to focus on these two dimensions if they want to be able to help students change their academic behavior.

VanderStoep & Pintrich (2008) developed the *Learning to Learn* intervention for college students. *Learning to Learn* was an undergraduate course designed to teach students basic concepts of cognition and motivation. The intention was to acquire a repertoire of learning strategies and to apply these to improve students' self-regulated learning. Students attended lectures and participated in laboratories. Topics of study included principles of information

processing, note taking, test preparation and taking, goal setting, and time management.

Evidence suggested the course decreased test anxiety and increased students' mastery goals, self-efficacy, interest and value for the course, and self-regulatory strategy use. Students' motivational beliefs related positively to their use of learning strategies (Hofer et al., 1998).

A fourth study by Kitsantas and Zimmerman (2009) further tested the generality of their former study's findings using a college sample. In the earlier study, they found that the girls' homework practices directly predicted their self-efficacy for learning beliefs and perceived responsibility beliefs. Their intention in conducting the study came from the lack of research on the impact of homework experiences on college students' acquisition of self-regulated learning skills. Most of the research on homework has focused on its positive impact on achievement (Keith et al., 2004; Trautwein & Koller, 2003).

Kitsantas and Zimmerman (2009) studied the influence of homework experiences on students' academic grades with 223 college students. The results revealed that the students' homework influenced their achievement both indirectly and directly via the two self-regulatory beliefs. They hypothesized that quality and quantity of college students' homework would predict their academic grade in an educational psychology class. The effect of homework experiences on students' grades was expected to be mediated by two key self-regulatory beliefs:

self-efficacy and perceived responsibility beliefs. Homework completed outside of classroom facilitated growth in students' sense of efficacy about learning on their own.

Bembenutty's (2003, 2007, 2011) and Bembenutty and Zimmerman's (2003) studies focused on college students' academic self-regulation in the context of individual differences. Bembenutty and Zimmerman (2003) examined individual differences in the way students responded to a self-regulation learning training. They predicted that students' motivational beliefs would be associated with at-risk college students' use of self-regulated learning strategies, homework completion, and academic performance. A 15-week intervention program was designed to enhance the self-regulatory learning skills and the motivation of at-risk urban minority college students. The participants included 58 college students in an introductory mathematics course.

The variables measured in this study included students' delay of gratification, self-efficacy, outcome expectancy, intrinsic interest, self-regulation, mid-term course grade, final course grade, and frequency of homework completion. The path analysis revealed that (a) motivational beliefs played a significant causal role in college students' homework completion, self-regulatory processes, and academic success; (b) these associations were mediated by students' use of self-regulation, delay of gratification, and homework completion; and (c)

students who engaged in self-regulation were better able to delay personal rewards and complete their homework more frequently.

Lastly, Schmitz and Wiese (2006) developed an intervention, based on a process-focused adaptation of Zimmerman's (2000) cyclical model of self-regulated learning, to increase self-regulated learning. In this study, diaries were used to investigate the process of self-regulated learning with time-series analysis methods. Schmitz and Wiese organized the intervention as four weekly 2-hour training sessions that focused on key self-regulatory processes such as goal setting, time management, planning, behavioral self-motivation, cognitive self-motivation, and concentration. The diaries were collected at the end of each week during the study.

There were three types of analyses that researchers conducted. First of all, pretest and posttest measurements were used to compare the experimental and the control group. Students in the experimental group with self-regulatory training showed significant improvements in the questionnaire measures. The improvements included intrinsic studying motivation, self-efficacy, effort, attention, self-motivation, handling distractions, and procrastination. Secondly, linear trends in self-regulation were reported in the diaries during the course of the 5-week intervention. These trend analyses demonstrated significant increases in self-efficacy, positive affect, personal understanding, and satisfaction. The third analysis involved interrupted time-series analyses.

They compared changes from the week before an intervention to two weeks after training. The diaries of students in the training group revealed that there were significant improvements in time management, planning, concentration, and a significant decrease in procrastination during the week following training to use those specific self-regulatory processes.

The results of Schmitz and Wiese's (2006) study, especially the pretest and posttest design, suggested that college students who were trained in self-regulated learning processes were effective in reaching their own study goals. Analyses of the correlations between training related and outcome variables show that learning time and learning outcome variables are predicted using intervention variables, especially procrastination and concentration. Comparison of pre-post measurements for the experimental and the control groups showed that students in the experimental group improved on the variables of self-efficacy, effort, and handling distractions compared to students in the control group. Though the training seems to be effective with regard to metacognitive and learning strategies, the weakness of this study was a failure to incorporate an alternative training to control for general training and the Hawthorne effect; however, since the main aim of the study was methodological, demonstrating the usefulness of diaries combined with time-series analysis, the results were satisfactory.

In closing, the intervention sessions used in this study were drawn mainly from Schmitz

and Wiese's (2006) study. The use of training sessions on metacognitive and learning strategies regarding self-regulation was of interest in determining their effectiveness within a college setting.

Summary

The ability to self-regulate is important for students at any level, especially for those in college, as they need to process a large volume of information and material in a short span of time as they study. Competent self-regulated learners have the knowledge and strategies needed to learn and remember information along with the ability to apply the skills to specific learning tasks (Bembenutty, 2009, 2011; Ruban, 2006; Schunk & Zimmerman, 2011).

Intervention that include self-regulatory constructs such as metacognition, goal setting and self-monitoring have been found to improve academic self-regulatory ability (Azevedo & Cromley, 2011; Dembo & Seli, 2004, 2008; Kitsantas & Zimmerman 2009; Schmitz & Wiese, 2006; VanderStoep & Pintrich, 2008). Additionally, current research suggests the effectiveness of self-regulated learning training as triadic processes (Bandura, 1986) for college students' learning.

More than a decade has passed since academic self-regulation has been a focus in the field of educational psychology in Japan. The focus on self-regulation has concentrated on

middle school to junior high school students in the area of mathematical learning (Ichikawa, Seo, & Uesaka, 2007; Uesaka, Manalo, & Ichikawa, 2007). The study of Ito (1996) was one of the early research-based examinations of Japanese college students on academic self-regulation. Ito studied an exploratory examination on self-regulation process of motivation using the experience sampling methods with six junior college students. Fujita (2010) examined the relationship between self-regulated learning strategy and academic help-seeking types with 193 university students. Kitazawa, Nagai, and Ueno (2008) studied how the use of e-learning system under blended learning (Khine and Lourdusamy, 2003) affected Japanese college students' motivation and self-regulated learning strategies. The MSLQ was the instrument used to analyze the results. Yamada, Hori, Kunita, and Chujo (2010) conducted a correlational study to test the relationships among achievement motive, self-efficacy, and learning strategy use in Japanese university students. They divided 159 university students into high achievement motive and low achievement motive groups and analyzed the difference of the frequency in the use of self-regulated learning strategies.

Though educational researchers have begun to study academic self-regulation using various hypotheses and perspectives, few studies have confined the effectiveness of metacognitive training among Japanese college students. The present study will focus on a

metacognitive intervention.

Chapter Three

Methodology

Participants and Sampling Procedure

This study used a convenience sample (Gall, Gall, & Borg, 2010) for the following reasons: (a) Japanese college students, a special population, were needed for the purpose of this study, (b) The administrators at each of the universities were interested in the results of the data collection, and (c) Four training sessions were needed, so it was most practical to have the sample located near the researcher. Therefore, participants were college students ($N = 35$) from two private Japanese Christian universities located in the Tokyo area.

The participants drawn from Tokyo Christian University (TCU) were the treatment group. TCU has a single Department of Theology with three majors: (a) Theological Studies, (b) International Christian Studies, and (c) Christian Social Welfare Studies. The total enrollment of undergraduate TCU students at the time of the study was 154 (36% female, 64% male).

Participants were recruited from the freshman and sophomore classes in the spring term of 2012 in the following manner. The researcher's colleague professor from TCU who was teaching a required course for freshmen and sophomores offered the researcher time during her course hour for the intervention since it fit the content of the course entitled, "Theological Practicum."

Students were required to sit through the intervention since it was programmed as a part of their prerequisite class. However, students had a choice of taking the three tests.

The researcher also obtained an agreement from Ibaraki Christian University (ICU) to collect data from its student population. Because of the similarities between colleges, these students served as the comparison group. ICU is a Christian college founded by a Church of Christ missionary in 1947. This university has four departments: (a) Literature, (b) Life Sciences, (c) Economics, and (d) Nursing. The total enrollment of undergraduate students at ICU at the time of the study was 2,308 (76% female, 24% male) and is considered a mid-sized university in Japan. Participants at ICU were recruited from an all-freshmen introductory Bible class. Participants' ages at both colleges ranged from 18-25, and a training program in academic self-regulation was offered to the students at both universities. Table 1 provides the descriptive statistics, summarizing participant demographic characteristics.

Table 1

Distribution of Participants by Class and Gender

Class	<i>n</i>	TCU	ICU
Freshman			
Female	20	9	11
Male	10	10	0
Junior			
Female	1	1	0
Male	4	4	0
Total	35	24	11

The researcher had difficulty finding another comparison group since small Christian universities are few in Japan. Because TCU is the only theological university found in Japan, it was not possible to find similar universities in course offerings or religious backgrounds. However, there are commonalities. Both TCU and ICU are liberal arts universities founded on a Christian mission statement. Both universities also offer chapel services on campus: four times a week for TCU and twice a week for ICU, as well as college student service in developmental and religious areas supported by a Christian center. The Christian center at ICU, called Kiara Hall, helped the researcher recruit participants. All subjects for the comparison group were volunteers

from a required course entitled the Introduction to Biblical Literature. All subjects belonged to the Literature department (1,176 students, 74% female, 26% male). The researcher visited the first class of the Introduction to Biblical Literature and gave a small presentation of the intervention, explaining some possible merits of the intervention. The professor of the course also encouraged students to participate in the intervention.

It should be noted that the researcher conducted an a priori power analysis using a web-based program called G-Power (Erdfelder, Faul, & Buchner, 1996) to determine the appropriate sample size for this study. Input included effect size set at either .03 or .05, alpha was set at .05, and power ($1 - \beta$ err prob) ranged from .8 to .5. The output included a summary of various sample sizes needed depending on how the effect size, alpha, and power were set. In light of running this analysis, the anticipated sample size goal was $N = 80$. However, due to problems with attracting willing participants from ICU, the actual sample size was 35. Thus, the statistical power was severely limited.

Research Design

A nonequivalent comparison-group design with repeated-measures (Gall et al., 2010) was employed in this study. The design included three independent variables: a) Group (treatment and comparison), b) Gender (male and female), and c) Testing (pretest, posttest, and posttest 2).

Exposure to self-regulated learning development was manipulated by the researcher. The dependent variable was the self-regulation scores derived from two subscales, Motivation and Metacognition, of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991).

More specifically, the study utilized a counterbalanced quasi-experimental design with repeated-measures (Gall et al., 2010; Vogt, 2005). This approach was selected as a way to control for various threats to internal validity, such as differential selection of participants, testing, and ethical concerns related to withholding intervention benefits from one participant group. Since the same instrument was administered three times to measure student levels of academic self-regulation, there was potential for gains in students' scores across testing due to exposure to the instrument. The counterbalanced design attempted to minimize this potential differential testing effect between the treatment and comparison groups because both the groups received equivalent exposure to the measure (Vogt, 2005). The differences in the dependent variable scores became a combination of treatment and practice effects.

As suggested above, the counterbalanced design allowed for participant assessment on the dependent measure over multiple occasions. Both groups can receive the intervention in an asynchronous fashion. Table 2 more clearly shows that both groups were pretested and then the

treatment group received the intervention while the comparison group served as the control.

Following the first intervention given to the treatment group, both groups were posttested. In the second phase, the comparison group received the intervention while the treatment group served as the control. Participants in each group were re-administered posttest 2.

Table 2

Experimental Quasi-experiment Design

College student sample						
Group	Pretest	Intervention	Posttest	Pretest	Intervention	Posttest2
Treatment	O	X	O	N/A		O
Comparison	O		O	N/A	X	O

Moreover, this design attempted to minimize the threat of pretest sensitization (Gall et al., 2010).

It is possible that the pretest might have enhanced how the participants responded to the experimental treatment. Pretest sensitization could have occurred because the pretest was a self-report measure of attitude (Gall et al.). Therefore, there is a possibility that if the experimental condition was implemented without use of the pretest, results may have differed from those obtained in this study. In short, by using this methodological approach, where all participants ultimately received the intervention, the design strengthened internal validity as well as made it

feasible and ethical.

Instrumentation

The Motivated Strategies for Learning Questionnaire (MSLQ) was used to collect data for this study (Pintrich et al., 1991). The MSLQ is a self-report inventory that consists of six motivation scales and nine learning strategy scales. The six motivation scales include Intrinsic Goal Orientation; Extrinsic Goal Orientation; Task Value; Control of Learning Beliefs; Self-Efficacy for Learning and Performance; and Test Anxiety. The nine learning strategies include Rehearsal, Elaboration, Organization, Critical Thinking, Metacognitive Self-Regulation, Time and Study Environment, Effort Regulation, Peer Learning, and Help Seeking.

According to its authors (Pintrich et al., 1991) the MSLQ was designed to assess college students' motivational orientations and their use of different learning strategies for a college course. It included motivational and self-regulated learning sections. The motivation section consisted of 31 items that include students' goals and value beliefs for a course, their beliefs about their ability to succeed in a course, and their anxiety about tests in a course. The strategies for the learning section included 31 items regarding students' use of different cognitive and metacognitive strategies. In addition, the strategies for the learning section consisted of 19 items concerning student management of different resources. There were 81 items on the 1991 version

of the MSLQ (Pintrich et al.). On the Likert scale instrument, student rated themselves accordingly: a) a 6-7 (high scores) as highly regulated student, b) a 3-5 score as a moderately self-regulated student, and c) a 1-2 as a naively regulated student.

The authors of the MSLQ (Pintrich et al., 1991) stated that this instrument was a self-report instrument and was subject to questions regarding reliability and validity. However, statistical and psychometric analyses provided evidence that the MSLQ is a psychometrically sound instrument. Validation of the MSLQ and the subscale correlations with final grades were significant, albeit moderate and demonstrated predictive validity (Pintrich et al., 1991). The Cronbach's alphas were generally adequate, ranging from .52 to .93. For the design of the MSLQ two confirmatory factor analyses (CFA) were computed. These analyses tested how closely the input correlations could be reproduced given the constraints that specific items fall on, or tap into one specific factor. The results showed that while the goodness of fit indices were not stellar, they were reasonable values (Pintrich et al., 1991).

The MSLQ (Pintrich et al., 1991) uses a seven-point Likert scale from *not at all true of me* to *very true of me*. The individual scales were created by taking the means of the items that make up that scale. For example, if a subscale had five items, an individual's score for the subscale was calculated by adding the five items and taking the average. Some items were

reverse coded items and needed to be reflected before scale construction. The authors of the MSLQ have not provided norms for the MSLQ since it is designed to be used at the course level. The researcher can develop local norms for the different courses if it is necessary.

Kitazawa et al. (2008) and Mori (2004) used the MSLQ with Japanese college students in their studies. Though Kitazawa et al. did not report internal consistency reliability estimates, Mori calculated a Cronbach alpha of .93 for the MSLQ's (Japanese version) self-efficacy subscale. Using the MSLQ with Japanese junior high school students, Ito (1996) reported the Cronbach alphas of the motivational scales as .90 and .87 and of the cognitive scales from .57 to .77.

The two MSLQ subscales Motivation and Metacognition used in this study were considered trait measures that were expected to indicate positive intervention effects from the pretest to posttest. These variables corresponded to the topics contained in the intervention. Table 3 has identified the trait variables by category, their specific variables, and their corresponding item numbers on the MSLQ.

Motivation. Intrinsic and extrinsic motivation were measured by six subscales in the Motivation section of the MSLQ. The subscales that assessed value components included Intrinsic Goal Orientation (4 items), Extrinsic Goal Orientation (4 items), and Task Value (5

items).

Self-efficacy. For assessing self-efficacy, subscales that measured expectancy components included Control Belief (4 items) and Self-efficacy for Learning and Performance (7 items).

Table 3

List of Trait Variables

Category	Variable	Number of items
Motivation	Intrinsic goal orientation	4
	Extrinsic goal orientation	4
	Task Value	5
Self-efficacy	Control belief	4
	S.E. for learning & performance	7
Learning strategies	Self-regulation	12
Metacognitive	Time & study environment	8
Internal resources	Effort regulation	4

Learning Strategies. Students' use of self-regulated learning strategies was examined using subscales that measured cognition and metacognition as well as internal and external resource management strategies. The three subscales that measured metacognitive strategies included Self-regulation (12 items), and two other subscales within Management of Internal

Resources called Time and Study Environment (8 items) and Effort Regulation (4 items). In summary, the researcher used 24 items with five subscales from the Motivation category of the MSLQ while 24 items were used from the Learning Strategy category of the MSLQ.

Back Translation

In order to ensure equivalency between the English and Japanese versions of the MSLQ, the researcher utilized back translation that involved three stages.

Stage I—initial translation. The first stage involved the initial translation of the MSLQ from English to Japanese. The back translator is bilingual whose mother tongue is the targeted language (Japanese) who also had the advantage of emphasizing which phrases were challenging and where there may have been uncertainties regarding ambiguous meanings in the MSLQ.

Stage II—synthesis of the translation. After the back translator submitted the MSLQ to the researcher in the target language, the researcher synthesized the forward translation and the back translation to produce a common translation. Included with this was documentation of the process so that future researchers have knowledge of the resolution of issues.

Stage III—back translation. Using the common translation, the researcher translated that version back to the original language English. This process of back translation was a means

of checking the content validity by comparing the content of the translated version with the content of the original version. In doing so, the researcher investigated any conceptual errors or inconsistencies. Beaton, Bombardier, Guillemin, and Ferraz (2000) demonstrate the importance of doing so: “An example might be in an item worded: Do you have difficulty eating with a fork? When that was not the utensil used for eating in the target country” (p. 3188).

In closing, the MSLQ was back translated mainly because it was developed in an English-speaking country and needed to be used at a private university where the native language is Japanese. The process of back-translation encompassed a cross-cultural adaptation that addressed the use of two languages and cultural issues. It gave the researcher increase confidence in the equivalency of the English and Japanese versions of the MSLQ.

Procedures and Description of Intervention

Participants in each group received four 70-minute self-regulation instructional and practice sessions over a period of one month. Students from TCU received the intervention in June 2012, while the intervention at ICU was implemented in July 2012. The main goal of the intervention was to enhance self-regulated learning of college students as measured by the MSLQ (Pintrich et al., 1991). In this study, the college students first received a short lecture with a PowerPoint presentation along with one or two activities. Students spent the last 10

minutes of each session doing reflective writing. The independent variable was an academic self-regulation training given in four weekly 70-minute sessions. The intervention included short presentations from the researcher, discussions, and meta-plan-techniques (See Appendix A).

Overview of the four sessions. The first session presented the importance of goal setting. After the presentation, students applied the criteria of goal setting with respect to their individual learning settings. In the second session students were introduced to motivational goal theories and practices. The PowerPoint presentation included the profile of a motivated person, how to assess one's motivation, and how to cope with failure and disappointments. This activity identified a behavior or performance in four areas of students' lives: academic, performance (art, sports, music) social; and service (volunteering, church). The third session focused on strategies for time-management, including managing one's study environment. Time-management was introduced as an important strategy to reach one's goals. Students learned about the advantages and disadvantages of time planning, and then they learned some methods of planning. The final session concentrated on learning internal tools. A brief lecture focused on three internal tools: healthy living, virtues, and self-control. In this final session, students were administered two self-report surveys addressing well-being and optimism. The following section describes each session specifically.

Session 1. The researcher introduced self-regulated learning using *Learning to Learn* “Chapter 2: Goal Setting” (VanderStoep & Pintrich, 2008). The importance of goal setting was presented, such as functions of goals, types of goal, and orientations of goals. After the short lecture, the students were asked to apply the criteria of goal setting with respect to their individual learning experiences. They listed the top three important study-related goals. Then, the group rated these goals with respect to the criteria. This session corresponded with Intrinsic Goal Orientation and Extrinsic Goal Orientation of the MSLQ.

Session 2. For this session *Learning to Learn* (VanderStoep & Pintrich, 2008), “Chapter 3: Motivation-Preparing to Use Your Will Component” was used. A PowerPoint presentation included the profile of a motivated person, assessing one’s motivation, and coping with failure and disappointments. The activity in this session identified a behavior or performance in four areas of students’ lives: academic, performance (art, sports, music), social, and service (volunteering, church). This session corresponded with the MSLQ Motivation and the variables of Task Value, Control Belief, and Self-efficacy for Learning and Performance.

Session 3. The main topics of the third session were strategies for time-management as described in *Learning to Learn* (VanderStoep & Pintrich, 2008), “Chapter 4: Managing Your Resources I – External Tools.” In addition, the researcher presented tips on managing one’s

study environment. Time-management was introduced as an important strategy to reach one's goals. The researcher expounded on the advantages and disadvantages of time management, and then students exercised various methods of planning. Students monitored their use of time during the following week. This session correlated with the MSLQ Learning Strategies and its variables of Time and Study Environment.

Session 4. The last session consisted of learning internal tools. Students received instruction on strategies for improving self-control using the materials from *Learning to Learn* (VanderStoep & Pintrich, 2008), "Chapter 5: Managing Your Resources II – Internal Tools." The succinct lecture focused on three internal tools: healthy living, virtues, and self-control. Students explored their own sense of well-being and optimism in this session. This session correlated with the MSLQ Learning Strategies and its variables of Metacognitive Self-regulation and Effort Regulation. Table 4 has shown how intervention sessions paralleled the MSLQ.

Table 4

List of MSLQ subscales and intervention sessions

Category	Variable	MSLQ Subscales	Intervention
Motivation	Intrinsic goal orientation	I. 1. a. (4 items)	Session 1
	Extrinsic goal orientation	I. 1. b. (4 items)	Session 1
	Task value	I. 1. c. (5 items)	Session 3
Self-efficacy	Control belief	I. 2. a. (4 items)	Session 3
	Learning & performance	I. 2. b. (7 items)	Session 3
Learning strategies			
Metacognitive	Self-regulation	II. 1. e. (12 items)	Session 4
Internal resources	Time & study environment	II.2. a. (8 items)	Session 2
	Effort regulation	II. 2. b. (4 items)	Session 4

Statistical Analyses

Descriptive and inferential statistics were computed to address the research questions.

The data were analyzed to verify suitability for use with parametric procedures. Inferential analysis was accomplished using two-way repeated-measures ANOVA. A factorial analysis was chosen because the researcher sought to examine main and interaction effects of two independent

variables: group with two levels and testing with two levels. The ANOVA produces an F ratio of between-group differences and within-group differences. The output of the two-way repeated measures ANOVA includes tests of main effects for the two factors as well as their interaction (Green & Salkind, 2003).

The two-way repeated-measures ANOVA was performed using SPSS's (version 19) general linear model (GLM). A single within-subjects factor, termed Testing, included three levels, quantitative data from the Pretest, Posttest, and Posttest 2 were assigned to the levels, respectively. Group was defined as between-subjects factors with two levels: Treatment Group and Comparison Group. Tests of statistical significance were analyzed at the .05 level.

In summary, students from Tokyo Christian University and Ibaraki Christian University participated in this study. The researcher presented various self-regulated learning strategies in four 70-minute sessions, using a counter-balanced quasi-experimental design. The following chapter details the results of conducting various statistical analyses.

Chapter Four

Results

The results of this study are presented in order of the key questions. The purpose of this

study was to analyze the effects of academic self-regulation training and gender on the MSLQ. A counterbalanced design was used to control for order effects. Descriptive statistics for all relevant variables are provided. Measures of central tendency, variability, and characteristics pertaining to the normality of each distribution are included. A review of the assumptions underlying the statistical procedures utilized in this study is provided, followed by a discussion of suitability with respect to the obtained data. Lastly, inferential statistics are presented and summarized in terms of their significance for each of the research hypotheses.

Research question 1 attempted to determine if there was a significant difference between the groups Treatment and Comparison on the MSLQ scores of Japanese college students who participated in the academic self-regulation training. Research question 2 attempted to determine if there was a significant difference in the MSLQ scores of Japanese college students by gender for those who participated in the academic self-regulation training. Lastly, research question 3 attempted to determine if there was a significant effect for group by gender on the MSLQ testing.

Research questions were tested using the two-way mixed ANOVA. The ANOVA produces an *F* ratio of between-group differences and within-group differences. The output of the two-way mixed ANOVA included tests of main effects for the two factors as well as their interaction (Gall et al., 2010).

The two-way mixed ANOVA was performed using SPSS's (version 19) general linear model (GLM). A single within-subjects factor, termed Testing was defined. Three levels were allocated to this factor, and quantitative data from the pretest, posttest, and posttest 2 were assigned to the levels, respectively. Group and gender were defined as between-subjects factors, and both were allocated two levels: the two Group levels were Treatment and Comparison. The effects of group and gender on each of the three quantitative measures were examined singly. Interaction effects should have been examined thereafter; however, this was not possible since all male students dropped out of the comparison group. Tests of statistical significance were analyzed at the .05 level.

Descriptive Statistics

Table 5 shows the descriptive statistics for the pretest, posttest, and posttest 2 with the pretest administered prior to the intervention. The data constituted the aggregated scores for the combined groups Treatment and Comparison; however, each of these variables represented a separate administration of the same instrument, the Motivated Strategies for Learning Questionnaire (MSLQ) (Appendix B). The possible range of scores on the MSLQ was 48 to 336.

Table 5

Descriptive Statistics for Pretest, Posttest, Posttest 2

	Pretest		Posttest		Posttest 2	
	Motivation	Metacog.	Motivation	Metacog.	Motivation	Metacog.
<i>N</i>	35	35	35	35	35	35
<i>M</i>	114.97	104.23	116.74	104.14	115.97	106.23
St. Error of Mean	2.51	2.78	2.71	2.48	2.85	2.44
<i>SD</i>	14.83	16.44	16.04	14.65	16.84	14.43
Skewness	.672	.124	.314	-.170	.606	-.001
Std. Error of Skewness	.398	.398	.398	.398	.398	.398
Kurtosis	.618	-.761	.620	.297	-.178	1.046
Std. Error of Kurtosis	.778	.778	.778	.778	.778	.778

Table 5 showed these pretest scores: a) for MSLQ Motivation ($M = 114.97$, $SD = 14.83$) and b) for MSLQ Metacognition ($M = 104.22$, $SD = 16.44$). The skewness and the kurtosis statistics for the pretest distribution fall within plus or minus one.

Tables 6, 7, and 8 present the data disaggregated by group assignment and by gender for all three variables. The pretest was administered prior to the intervention. Table 5 details the

pretest scores.

Table 6

Pretest Data by Group and Gender

Group	Gender	Motivation		Metacognition		<i>n</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Treatment	Male	114.46	15.71	104.62	20.05	13
	Female	115.09	14.86	104.82	15.70	11
	Total	114.75	15.00	104.71	17.80	24
Comparison	Female	115.45	15.15	103.18	13.70	11
Total	Male	114.46	15.71	104.62	20.05	13
	Female	115.27	14.65	104.00	14.40	22
	Total	114.97	14.83	104.23	16.44	35

The posttest was administered at the completion of the intervention for the group Treatment while the group Comparison group had not received the intervention yet. According to the data presented in Table 7, posttest scores for MSLQ motivation ($M = 116.74$, $SD = 16.04$) and for MSLQ Metacognition ($M = 104.14$, $SD = 14.65$) indicate that while MSLQ Motivation mean scores improved, MSLQ Metacognition mean scores reduced slightly. Both the skewness

and the kurtosis statistics for the posttest distribution fall within plus or minus one.

Table 7

Posttest Data by Group and Gender

Group	Gender	Motivation		Metacognition		<i>n</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Treatment	Male	113.92	17.05	103.15	18.25	13
	Female	117.36	13.41	105.91	13.69	11
	Total	115.50	15.26	104.42	16.04	24
Comparison	Female	119.45	18.07	103.55	11.72	11
Total	Male	113.92	17.05	103.15	18.25	13
	Female	118.41	15.57	104.73	12.50	22
	Total	116.74	16.04	104.14	14.65	35

Posttest 2 was administered three months after the posttest. According to the data presented in Table 8, posttest 2 scores for MSLQ Motivation ($M = 115.97$, $SD = 16.84$) and for MSLQ Metacognition ($M = 106.23$, $SD = 14.43$) showed that the MSLQ Motivation mean score dropped slightly while the MSLQ Metacognition mean score improved by two points.

Table 8

Posttest 2 Data by Group and Gender

Group	Gender	Motivation		Metacognition		<i>n</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Treatment	Male	115.15	17.47	102.77	14.83	13
	Female	118.73	18.77	110.18	18.32	11
	Total	116.79	17.77	106.17	16.58	24
Comparison	Female	114.18	15.26	106.36	8.66	11
Total	Male	115.15	17.47	102.77	14.83	13
	Female	116.45	16.85	108.27	14.12	22
	Total	115.97	16.84	106.23	14.43	35

Inferential Statistics

There are several statistical assumptions for using a two-way mixed ANOVA: (a) The individuals represent a random sample from the population, and the scores associated with different variables are not related, (b) The dependent variable is normally distributed in the population for each combination of levels of the within-subjects factors, and (c) The population variance of the different variables are equal (Sprinthall, 2003).

The major assumption that was violated was the fact that a random sample was not used in this study; instead, a convenience sample was used. According to Gall et al. (2010), inferential

statistics can be used with data collected from a convenience sample with careful conceptualization to represent a particular population. Also, when a convenience sample is used, the researchers and readers of their report must infer a population to which the results might generalize. A careful description of the sample used in this study was provided in Chapter Three.

Inferential statistics: Research question one. A two-way mixed ANOVA (Table 9, Table 10) was performed to determine whether a significant difference existed in the academic self-regulation development of Japanese college students who participated in the group Treatment and those who participated in the group Comparison.

Table 9

Two-Way Mixed Analysis of Variance for Group and Testing Measured by MSLQ Motivation

Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between-subject					
Group	10.56	1	10.56	.017	.896

Error	19017.96	33	603.57		
Within-subject					
Testing	98.06	2	49.03	.561	.573
Group x Testing	162.52	2	81.26	.931	.399
Error	5763.59	66	87.33		

According to the ANOVA results, the main effect for group on MSLQ Motivation scores was not significant, $F(1, 33) = .017, p > .05$. The main effect for testing was not significant, $F(1, 33) = .561, p > .05$. Overall, students did not improve the MSLQ Motivation scores in either condition. The interaction effect on the MSLQ Motivation scores by group and testing was not significant, $F(1, 33) = .931, p > .05$.

The Levene's Test of Equality of Error Variances supported the assumption of homogeneity for the MSLQ motivation pretest ($F = .393, p = .535$), posttest ($F = .555, p = .462$), posttest 2 ($F = .778, p = .384$); and MSLQ Metacognition pretest ($F = 1.52, p = .225$), posttest ($F = .411, p = .526$), and posttest 2 ($F = 2.985, p = .093$).

Table 10

Two-Way Mixed Analysis of Variance for Group and Testing Measured by MSLQ Metacognition

Source	SS	df	MS	F	p
Between-subject					

Group	12.18	1	12.18	.020	.888
Error	19855.96	33	601.70		
Within-subject					
Testing	106.02	1.50	70.96	.957	.368
Group x Testing	11.42	1.50	7.60	.102	.847
Error	3677.08	49.58	74.16		

According to the ANOVA results, the main effect for group on MSLQ Metacognition scores was not significant, $F(1, 33) = .020, p > .05$. The main effect for testing was not significant, $F(1, 33) = .957, p > .05$. Overall, students did not improve the MSLQ Metacognition scores in either condition. The interaction effect on the MSLQ Metacognition scores by group and testing was not significant, $F(1, 33) = .102, p > .05$.

Inferential statistics: Research question two. A two-way mixed ANOVA should have been performed to determine whether a significant difference existed in the MSLQ scores of Japanese college students by gender for those who participated in the academic self-regulation training. However, it was not possible to compare group difference by gender since all male students in the comparison group dropped out of the intervention.

Table 11

Pretest, Posttest, and Posttest2 Data by Gender

Testing	Gender	Motivation		Metacognition		<i>n</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pretest	Male	114.46	15.71	104.62	20.05	13
	Female	115.27	14.65	104.00	14.40	22
	Total	114.97	14.83	104.23	16.44	35
Posttest	Male	113.92	17.05	103.15	18.25	13
	Female	118.41	15.57	104.73	12.50	22
	Total	116.74	16.04	104.14	14.65	35
Posttest2	Male	115.15	17.47	102.77	14.83	13
	Female	116.45	16.85	108.27	14.12	22
	Total	115.97	16.84	106.23	14.43	35

Descriptive statistics described earlier in chapter three the basic features of the data in this study. They showed simple summaries about the sample and the measures in the form of distribution, central tendency and dispersion. They furnished a powerful summary that enables comparisons across units (Gall et al., 2010). Descriptive statistics of Testing by Gender (Table 11) showed a clear tendency toward female students' MSLQ subscale scores. First, standard deviations of MSLQ subscales by female students are smaller than male students' standard deviation on three tests. Second, female students scored higher by one or more points in the average mean of MSLQ subscales on three tests except the MSLQ Metacognition on the pretest.

Inferential statistics: Research question three. A three-way mixed ANOVA should have been performed to determine whether a significant effect existed for gender on the MSLQ scores of Japanese college students who enrolled in the group Treatment and the group Comparison by testing. However, since all males in the group Comparison dropped out of the intervention, it was not possible to compare group differences by gender.

Student's reflections. Despite the lack of finding statistical significance in this study, the students' reflections written after each intervention session offered insight into the possible effectiveness of teaching self-regulated learning to Japanese students in college (See Appendix C). The first session focused on the importance of setting goals, and students rated their top three study-related goals. Some of the comments from students showed that setting up goals concretely could give them the energy needed to learn. Also, one student wrote that it was important to set up short-term goals to accomplish long-term goals, and another student reflected that she was used to setting up goal strategies.

The second session concentrated on assessing one's motivation in three areas: a) academic, b) performance (art, sports, and music), and c) service (volunteering and church). Students reflected that they generally understood the content of this session, yet still thought it was interesting and useful. Their comments showed they understood the importance of

reflecting on their motivation and learning how to know themselves. They felt they could now accurately evaluate themselves and take steps to improve.

During the third session students learned about the importance of managing their study environment focusing on time management. They were asked to monitor their use of time for one week. Their responses showed the importance of time management and helped them visualize and concretely plan their weekly schedules. One student admitted to have been taking time management too lightly and was cognizant of its importance.

The final session centered on learning internal tools to improve self-control, including healthy living and having virtues. Students reflected that life issues matter to college learning and appreciated the researcher's training session. They revealed that academics are important, but it was important to look at one's health, values, and human relations. One student desired to learning more because life habits matter in one's college life, and another student revealed that she lacked in managing herself.

Overall, the students' reflections provided written insight into the idea that self-regulated learning strategies and metacognitive learning provided students with a means to develop academic self-regulation. Even though statistical significance was not found for this study, the reflections offered the researcher another perspective of self-regulation because it is a complex

and multidimensional construct.

Summary

The two-way mixed ANOVA was computed in order to test the research hypotheses:

There is a significant effect for Group (two levels: treatment and comparison) on Japanese college student development as measured by their scores on the MSLQ testing at three levels: a) pretest, b) posttest, and c) posttest 2.

Prior to performing the parametric procedure, the data were analyzed to check for major violations of parametric assumptions. Descriptive statistics were computed for all groups and reported in Tables 5-8. Levene's Test of Equality of Error Variances was performed to test the assumption of homogeneity of variance. The Levene's Test of Equality of Error variances was not significant for all cases.

The obtained data failed to support the first research hypothesis as determined by the mixed ANOVA. The effect of Group on Testing was not statistically significant. The obtained data failed to support the second research hypothesis. Due to all males dropping from the group Comparison, the researcher was not able to test for statistical significance of the effect of Group by Gender was not able to test statistically.

The following chapter provides a summary of the purpose of this study and the

methodology employed. The practical significance of the research findings is examined within the context of prior studies. A discussion of the limitations of this study is included along with suggestions for future research.

Chapter Five

Discussion of Results and Conclusion

The purpose of this study was to investigate the effects of self-regulated learning strategies training on Japanese college students' academic self-regulation development. Building on previous research, the investigator desired specifically to study Japanese students. A second goal was to determine whether specific gender differences existed in terms of student responsiveness to the self-regulated learning strategies interventions. Participants in the study

consisted of a convenience sample from a population of freshmen and sophomore college students in private Christian colleges located in Chiba and Ibaraki prefecture in Japan.

The practical significance of the research findings is examined in this chapter. A discussion of the limitations of this study is also included along with suggestions for future research.

Review and Discussion of Results

The findings of this study are reviewed in order of the research questions posted in Chapter One. A presentation of the results, with relevant tables and figures, can be found in Chapter Four. The following is a summary of main findings.

First Research Question

The first research question focused on whether or not there is a significant difference between groups on college students' academic self-regulation as measured by the Motivated Strategies for Learning (MSLQ) subscales scores that were labeled Motivation and Metacognition. The researcher used a counterbalanced quasi-experimental design (Gall et al., 2010) to answer the research questions of this study. Two independent implementations of the intervention were conducted to enhance external validity as well as internal validity. Both the treated and comparison groups received initial pretests. Then the treatment group received the

intervention while the comparison group served as the control. Afterwards, both groups took a posttest. In the second phase the comparison group received the intervention while the treatment group served as the control.

The intervention consisted of four sessions. The first session presented the importance of goal setting in the context of academic self-regulation. Motivational theories and practices were introduced in the second session. The third session focused on strategies for time-management including managing one's study environment. The last session was devoted to the learning of internal tools.

A two-way mixed ANOVA was performed to determine whether a significant difference existed between groups on Japanese college students' academic self-regulation as measured by the MSLQ subscales scores that were labeled Motivation and Metacognition. The ANOVA procedure revealed that the main effect for group on MSLQ Motivation scores was not significant, $F(1, 33) = .017, p > .05$. The main effect for testing was not significant, $F(1, 33) = .561, p > .05$. The interaction effect Group x Testing did not yield a statistically significant F ratio ($F = .931, p = .399$) for the MSLQ Motivation.

According to the ANOVA results, the main effect for group on MSLQ Metacognition scores was not significant, $F(1, 33) = .020, p > .05$. The main effect for testing was not

significant, $F(1, 33) = .957, p > .05$. The interaction effect Group x Testing did not yield a statistically significant F ratio ($F = .102, p = .847$) for the MSLQ Metacognition.

Despite the results indicating there was not a statistically significant effect for Group, treatment group average scores on both MSLQ Motivation and MSLQ Metacognition improved slightly. In addition, between the first and second posttests, comparison group average scores on MSLQ Metacognition improved while scores on MSLQ Motivation decreased by five points. Three possible explanations are proposed, yet all are tentative. First, there may have been a ceiling effect for the comparison group on the posttest that may have contributed to more substantial regression towards the mean. These participants who had scores fall at either extreme on a measure tended to have scores nearer the mean when the variable was measured for a second time (Gall et al., 2010). Second, the non-equivalent group design may have caused a difference in score regression even though the pretest was administered to compensate for the design, and the comparison group may have held some advantage based on their MSLQ Motivation scores that were then reflected in their posttest 2. Lastly, students in the comparison group were majoring in elementary education and were taking a cognitive psychology course at the same time as they were participating in the intervention; this may have affected their scores.

Second Research Question

The second research question focused on whether or not there is a significant difference in the MSLQ subscale scores that were labeled Motivation and Metacognition for Japanese college students who participated in the academic self-regulation training by gender. Because all male students in the group Comparison dropped out of the intervention, it was not possible to compare group difference on gender, and the researcher eliminated this question from the study. However, the following paragraphs explain the statistics and an explanation for the lack of statistical significance.

Descriptive statistics of Testing by Gender (Table 11) show a clear tendency of female students: a) Standard deviations of MSLQ subscales by female students are smaller than male students' standard deviation on three tests, and b) Female students scored higher by one or more points in the average mean of MSLQ subscales on three tests except the MSLQ Metacognition pretest.

A possible explanation for this result can be found in research that indicates self-efficacy by gender is related to age or grade level (Schunk & Pajares, 2002) with differences begin to surfacing in the middle school years (Wigfield, Eccles, & Pintrich, 1996). Whitley (1997) found in a meta-analysis of computer self-efficacy that the mean effect sizes for gender differences fluctuated depending on the age of the sample: (a) 0.09 for elementary and middle school, (b)

0.66 for high school, (c) 0.32 for college, and (d) 0.49 for adult samples.

Another possible explanation comes from other empirical research models that focused on gender differences related to self-regulated learning that are derived from social cognitive theory (Pintrich & De Groot, 1990; Zimmerman, 2002; Zimmerman & Martinez-Pons, 1990).

When academic functioning among middle school and high school students has been examined for gender differences across various domains, the data suggest that female students used self-regulated learning strategies to a greater extent than males.

Descriptive statistics describe the basic features of the data and are not used to reach conclusions that extend beyond the immediate data. They provide simple summaries about the sample and the measures in the form of distribution, central tendency and dispersion.

However, female students improved their average scores on both MSLQ Motivation and MSLQ Metacognition from pretest to posttest and then again from posttest to posttest 2. This suggests that female may have been more responsive to and may have benefitted more from the academic self-regulation intervention. The true source of this gender difference is unclear and cannot be inferred from the findings of this study.

Third Research Question

The third research question focused on whether or not there was a significant effect for

group by gender on the MSLQ scores of Japanese college students who participated in the academic self-regulation training. As mentioned in Chapter Three, because all male subjects dropped out of the comparison group, this research question could not be answered.

A plausible explanation for the researcher's inability to answer the third research question stems from a sampling issue. The convenience sample employed in this study became its greatest limitation. Participants were not randomly selected; therefore, when the results of inferential statistics may be questioned and interpretations should be cautiously made.

Additionally, external validity issues arise when a convenience sample is used. Specifically, the accessible population for this study is not necessarily reflective of the target population. Finally, when inferential statistics are used with convenience sample data, that sample must be carefully conceptualized (Gall et al., 2010).

Limitations of the Study

There are several limitations to the present study that stem from varied threats to internal and external validity. These limitations are presented in this section. The categories of limitations are research design concerns, sampling concerns, methodological weakness, and data issues.

Design

Regarding the research design, the quasi-experimental nature of the present study brings several concerns related to differential selection. Participants were not randomly assigned to groups. The threat to internal validity raised by differential selection was significant. According to Gall et al. (2010) the main threat to the internal validity of a nonequivalent control-group experiment is the possibility that group differences on the posttest are due to preexisting group differences rather than to a treatment effect. A pretest was used to decrease this threat. However, statistical control of such differences is inferior to random assignment.

Sampling

Regarding sampling, the most concerned limitation is the use of convenience sampling in this study. Because the participants did not consist of a group of randomly selected individuals, the use of inferential statistics is controversial. Gall et al. (2010) stated that some researchers believe that inferential statistics for these samples cannot be interpreted meaningfully.

The use of a convenience sample raises external validity issues. Population validity is a specific concern, as the experimentally accessible population is not necessarily reflective of a broad target population. The researcher should have investigated an avenue in which to increase the random sample. Furthermore, Gall et al. (2010) stated that some researchers believe that inferential statistics for these samples cannot be interpreted meaningfully.

The use of a convenience sample raises external validity issues. Population validity is a specific concern, as the experimentally accessible population is not necessarily reflective of a broad target population. Gall et al. (2010) maintained that inferential statistics can be used with convenience samples if certain conditions are met. They recommend the use of inferential statistics with the data collection from a convenience sample only if the sample is carefully conceptualized to represent a particular population. Any attempts of generalization from this study's findings will require the identification of a population that is similar to this study. Chapter Three describes several characteristics of the sample.

The actual sample size and constitution of the comparison group became small. More participants dropped out of the study for the group Comparison. The few male participants from the beginning of the study did not complete the scheduled session. An important consideration in judging the credibility of research is the size of the sample (McMillan, 2012). Although the anticipated sample size goal was $N = 80$, due to problems with attracting willing participants for the comparison group, the actual sample size was 35. Thus, the statistical power was severely limited. In hindsight, the researcher might have contacted larger public universities that could have been used for this study.

Methodology

Regarding the methodology, several points of weakness must be mentioned. First, the researcher's position as a professor to the study participants raises that threat of experimenter bias. Having an assistant to both the treatment and comparison groups reduces a potential confounding variable, but when the professor is also the researcher, experimenter bias has the potential to affect the study's outcome.

A second concern regarding the methodology is that differential treatment mortality occurred over the course of the intervention. More students were lost from the group Comparison than the group Treatment. The researcher excluded the participants who dropped from the statistical analyses instead of performing a confirmatory mean-substitution ANOVA. This is one of the reasons to decrease the sample size.

A third concern regarding the methodology is repeated use of the same criterion instrument. This causes threats to the internal validity and external validity of the intervention. Regarding internal validity, statistical regression is a threat associated with any test-retest procedure (Gall et al., 2010). Also, it is possible that repeated exposure to the instrument caused the participants to become test-wise. However, if this did occur, it should have occurred to the same degree between the two groups. Regarding external validity, it is possible that pretest and posttest sensitization occurred. It is certainly possible that exposure to the pretest served as a

learning opportunity, and that this learning experience had a meaningful impact on the intervention. A similar argument can be made concerning the posttest. In both case, any potential interaction of testing with the treatment hinders the ability to generalize from this study's findings.

A fourth methodological concern is the time of instruction may have functioned as an extraneous variable. Intervention took place in the late afternoon for both groups. There is research to suggest that a class scheduled for the late afternoon may have been a disadvantage due to convergence upon fatigue and sleepiness (Taylor, Vatthauer, Bramoweth, Ruggero, & Roane, 2013).

There is also the possibility that the researcher should have considered a longer period of time for this research study instead of concentrating on a four-week period of time. Studies (Hu & Driscoll, 2013; Pintrich, 1995) have suggested that the time requirement for effective learning strategy training is fourteen weeks. A research timeline of one semester might have given students, especially the males, the message that their investment of time in this research study would be very beneficial.

Implications of the Findings

The findings of this study do not offer evidence that academic self-regulated learning

strategies training improves Japanese college students' self-regulated learning skills. Further studies are needed to provide greater clarity on the magnitude of this effect. The study's limitations might serve as the explanation for this result.

Suggestions for Future Research

Methodologically, this study has weak generalizability because there was a lack of random selection and assignment. Future research is required to determine whether or not the results of this study would hold true for other populations. This could be accomplished with a larger sample size, which is imperative for obtaining and interpreting statistical data.

Theoretical advances that contextualize Asian college students' self- and externally regulated processes are needed. The literature lacks original theoretical works that specifically focus on Asian students.

On a practical level there is growing evidence that supports the advantages of learners having self-regulatory abilities and metacognition (Cleary & Zimmerman, 2012; Miller & Geraci, 2011; Zimmerman & Labuhn, 2012). Implementation of learning to learn courses among Japanese universities should be encouraged with evidence-based research.

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Appendix A

Intervention Material Week 1 to Week 4

スタディーセッション 1-ゴールに関する理解
(Week 1)**このセッションで学ぶこと：**

- ☆ゴールの設定の意義
- ☆長期ゴールと短期ゴールの設定の仕方
- ☆難易度がありつつも現実的なゴール
- ☆競争的なゴール設定の長短
- ☆失敗や間違いの扱い方

このセッションのキーワード：

- ★長期ゴール
- ★短期ゴール
- ★プロセス重視のゴール
 - ★ 結果重視のゴール
 - ★到達型ゴール
 - ★実績型ゴール

長期ゴールと短期ゴールの設定

長期ゴール

短期ゴール

職業：

パーソナル：

余暇・趣味

職業：

パーソナル

余暇・趣味

短期ゴールの具体的設定

短期ゴール：

具体性と測定：

状況の想定：

ゴールの難易度設定

ゴール 1

簡単レベル：

チャレンジレベル：

かなり難しいレベル：

ゴール 2

簡単レベル：

チャレンジレベル：

かなり難しいレベル：

ゴールの階層 / ピラミッド

レベル1-人生を通してのゴール：

レベル2-大学在学中のゴール：

レベル3-特定の授業のゴール：

レベル4-大学授業全般のゴール：

スタディーセッション2-動機づけ

(Week 2)

このセッションで学ぶこと：

- ☆自分を動機づけることを学ぶ
- ☆自分の学びに関する動機づけを査定する / 知る
- ☆やる気を失ってギブアップしないために、失敗や失望に関する備えをする
- ☆自分が学生生活で何に価値を置き、何を重要視し、何に興味があるかを査定する

このセッションのキーワード：

- ★ 帰属、属性
- ★ 選択行為
- ★ 期待
- ★ 外的報酬

★ 動機

★ 強化子

★ 自己概念

★ 自己効力

★ 自尊心

★ 狀況的興味

★ 価値

動機づけされている行動

賢明な選択：

Q-勉学に対するモチベーションが高い人がする選択は？

努力：

Q-まわりのひとはあなたの「努力」に関してどう表現しますか？

持続性 / 忍耐

Q-努力と忍耐の共通点は？違いは？

認知的取り組み

Q-勉強している時あなたの頭の中はどんな状態でしょうか？

達成感

Q-達成感と動機付けの関係は？



(自分自身への)期待—3つのレベル

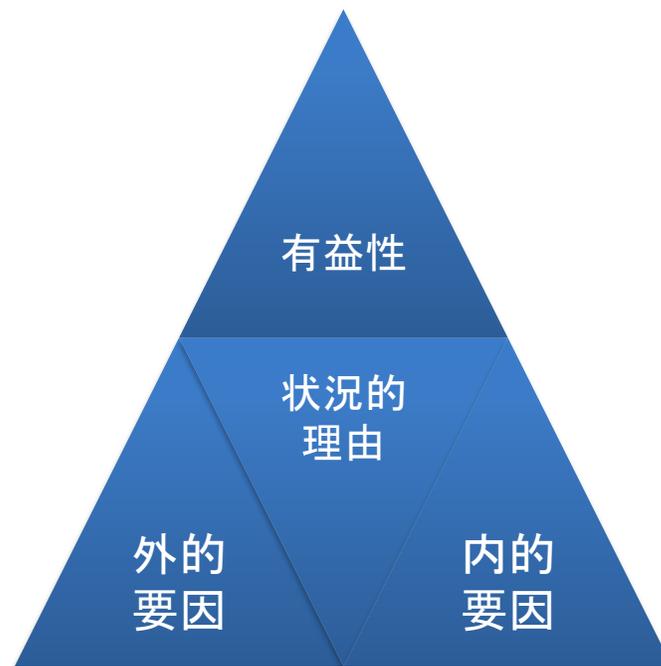
- 1) 自己概念—自分に関する全般的な信念 ⇒ 自尊心
- 2) 自己効力感—(特定の)目標に到達することができるという期待
や自信

3) 帰属性 / アトリビューション

ー自分の行った行為や結果に関する (成功や失敗) 原因をどう

説明するか

価値観



価値観—なぜそれをするのか？といった理由の部分

☆ワイナーによる達成行動の原因認知の分類

ACTIVITY 1

自分の周りの人でモチベーション（動機づけ）の高い人に質問してみましょう！：「あなたの動機づけをキープさせてること5つをリストしてもらえますか？」

ACTIVITY 2:

皆さんの生活の4つの分野での自己概念、自己効力感を確認してみま
しょう！

スタディーセッション3-リソースの管理

(Week 3)

このセッションで学ぶこと：

☆週単位スケジュールの大切さ

☆使えて柔軟性のある週単位スケジュールを作る

☆邪魔されない勉強する場所の確保

☆学びをたすける仲間の大切さ

☆ スタディーグループを作る

☆ メンターや教員のサポートの大切さを理解する

☆ 少なくとも一人の教員とよい関係を持つ

このセッションのキーワード：

- ★ 適応的サポートの求め方
 - ★ 依存的サポートの求め方
 - ★ ピアサポート
 - ★ 教員サポート
 - ★ リソースの管理
 - ★ 勉強する環境の管理
 - ★ 時間の管理

リソースの利用度チェック

した事がない

たまにする

よくする

いつもする

(1) 毎週週単位のスケジュールをつくる。

①

②

③

④

(2) やらなくてはならない事のリストを作り、優先順位を決める。

①

②

③

④

(3) 1週間の中で必ず勉強時間を確保する。

①

②

③

④

(4) 邪魔されないで勉強できる場所がある。

①

②

③

④

(5) 授業を取ってる仲間で勉強会をする。

① ② ③ ④

(6) 教員のサポートを自分から受けに行く。

① ② ③ ④

(7) 音楽を聞いたりテレビを見ながら勉強する。

④ ③ ② ①

(8) 勉強していると寝てしまう。

④ ③ ② ①

週単位のスケジュール

月 火 水 木 金 土 日

7 A.M.

8 A.M.

9 A.M.

10 A.M.

11 A.M.

正午

1 P.M.

2 P.M.

3 P.M.

4 P.M.

5 P.M.

6 P.M.

7 P.M.

8 P.M.

9 P.M.

10 P.M.

勉強の環境の管理

家での勉強環境—チェック項目

-  勉強する場所
-  プライバシー
-  机&いす
-  勉強道具
-  集中力を阻害するもの
-  休憩

学校での勉強環境—チェック項目

-  勉強する場所
-  プライバシー
-  机&いす

 勉強道具

 集中力を阻害するもの

勉強のサポート～学生同士での助け合い&教員からのサポート

勉強のサポートに関する大切な4ポイント：

1) 勉強のサポートを求めるタイプ、求めないタイプ

2) サポートを求める理由、求めない理由

3) 勉強のサポートの種類

4) 誰からサポートを受けるか

スタディーセッション4-リソースの管理II

(Week 4)

このセッションで学ぶこと：

- ☆ 健康な生活習慣と大学生活での成功
- ☆ 心理的な強さと大学での成功体験 & 正しい自分への評価
- ☆ 自分のコミュニケーション能力を知る事 & 多様性を経験する

ことの重要性

このセッションのキーワード：

- ★ コミットメント
- ★ 文脈に即した相対論
- ★ 満足や楽しみの遅延
- ★ 二重性、二元的
- ★ 間違いの(原因)帰属
- ★ 寂しさ
- ★ 楽 観 性

私達のリソース三つのポイント

★

1. 健康な生活

- 栄養・運動
- 睡眠
- 余暇
- 注意すべき行動

2. 徳

- コミットメント
- セルフ・コントロール
- 謙遜さ
- 楽観性

3. 人間関係

- 孤独感
- コミュニケーション
- 多様性の尊重

Appendix B

The Motivated Strategies for Learning Questionnaire (MSLQ)

**The Motivated Strategies for
Learning Questionnaire
(MSLQ)**

Japanese-English version

7段階のライカースケールを用いて次の79問の質問に答えてください。

質問1：履修するクラスでは、私が新しい事を学べるやや難しめの教材がいい。

In a class like this, I prefer course material that really challenges me so I can learn new things.

1 2 3 4 5 6 7

質問2：適切な方法で勉強すれば、私は授業での内容を学ぶことができるだろう。

If I study in appropriate ways, then I will be able learn the material in this course.

1 2 3 4 5 6 7

質問3：テストを受ける時、自分が他の学生よりどれだけできないかを考える。

When I take a test I think about how poorly I am doing compared with other students.

1 2 3 4 5 6 7

質問4：ある授業で学んだことは、他の授業で活用することができると思う。

I believe I will be able to use what I learn in this course in other courses.

1 2 3 4 5 6 7

質問5：私は履修するクラスで良い成績と取れると信じている。

I believe I will receive an excellent grade in this class.

1 2 3 4 5 6 7

質問6：授業で学ぶ一番難しい教材を私は理解できると確信している。

I'm certain I can understand the most difficult material presented in the readings for this course.

1 2 3 4 5 6 7

質問7：クラスで良い成績を取るのが今の自分にとって一番満足が得られることだ。

Getting a good grade in this class is the most satisfying thing for me right now.

1 2 3 4 5 6 7

質問 8 : テストを受けている時、解答できなかった質問のことを考えてしまう。

When I take a test I think about items on other parts of the test I can't answer.

1 2 3 4 5 6 7

質問 9 : 授業で扱う教材を学べないとしたら、それは私自身の責任だ。

It is my own fault if I don't learn the material in this course.

1 2 3 4 5 6 7

質問 10 : 履修しているクラスで、授業の教材を学ぶことは私にとって重要なことだ。

It is important for me to learn the course material in this class.

1 2 3 4 5 6 7

質問 11 : 自分にとって今一番大切なことは、GPA をあげることなので、履修しているクラスでの一番の関心事はよい成績を取ることだ。

The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.

1 2 3 4 5 6 7

質問 12 : 授業で教えられる基礎的な概念は理解できる自信がある。

I'm confident I can learn the basic concepts taught in this course.

1 2 3 4 5 6 7

質問 13 : 可能ならば、クラスでは他の学生よりも良い成績を取りたい。

If I can, I want to get better grades in this class than most of the other students.

1 2 3 4 5 6 7

質問 14 : テストを受ける時、失敗したらどうなるかと考えてしまう。

When I take tests I think of the consequences of failing.

1 2 3 4 5 6 7

質問 15 : 授業で教員によって紹介される一番難解な教材も理解できる自信がある。

I'm confident I can understand the most complex material presented by the instructor in this course.

1 2 3 4 5 6 7

質問 16 : 履修するクラスでは、難しくても私の興味を湧きたてる教材がいい。

In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.

1 2 3 4 5 6 7

質問 17 : この大学の授業で扱う分野に私はとても興味がある。

I am very interested in the content area of this course.

1 2 3 4 5 6 7

質問 18 : もし努力すれば、クラスで扱う内容を私は理解できる。

If I try hard enough, then I will understand the course material.

1 2 3 4 5 6 7

質問 19 : テストを受ける時、落ち着かなくうろたえたような気持ちになる。

I have an uneasy, upset feeling when I take an exam.

1 2 3 4 5 6 7

質問 20 : 授業の宿題やテストをしっかりと行なう自信がある。

I'm confident I can do an excellent job on the assignments and tests in this course.

1 2 3 4 5 6 7

質問 21 : 履修している授業で良い成績を収めるつもりである。

I expect to do well in this class.

1 2 3 4 5 6 7

質問 22 : 履修している授業で私が一番満足感を得られるのは、(授業) 内容を可能な限り理解しようと努力したときだ。

The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.

1 2 3 4 5 6 7

質問 2 3 : クラスの教材は学習すると私に有益だと思う。

I think the course material in this class is useful for me to learn.

1 2 3 4 5 6 7

質問 2 4 : 宿題に選択肢がある場合、たとえ良い成績がとれなくても学びが深まる宿題を私は選ぶ。

When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.

1 2 3 4 5 6 7

質問 2 5 : もし授業の内容が理解できないとしたら、それは私の努力が足りないからだ。

If I don't understand the course material, it is because I didn't try hard enough.

1 2 3 4 5 6 7

質問 2 6 : 授業で扱う科目の理解は私にとってとても大切だ。

Understanding the subject matter of this course is very important to me.

1 2 3 4 5 6 7

質問 2 7 : テストを受ける時、心臓がドキドキするようになる。

I feel my heart beating fast when I take an exam.

1 2 3 4 5 6 7

質問 2 8 : 授業で教えられるスキルを収得できると確信している。

I'm certain I can master the skills being taught in this class.

1 2 3 4 5 6 7

質問 2 9 : 自分の能力を家族、友人、就職活動等に示すのは重要なので、私はクラスでよい成績を収めたい。

I want to do well in this class because it is important to show my ability to my family, friends, employers, or others.

1 2 3 4 5 6 7

質問30：授業のためリーディングをする時、自分の考えを整理するために教材のアウトラインを作る。

When I study the readings for this course, I outline the material to help me organize my thoughts.

1 2 3 4 5 6 7

質問31：他のことを考えていて、大切なポイントをよく逃すことが授業中にある。

During class time I often miss important points because I'm thinking of other things.

1 2 3 4 5 6 7

質問32：履修しているクラスの勉強をしている時、クラスメートや友人に教材の説明を頻繁（ひんばん）にするように心がけている。

When studying for this course, I often try to explain the material to a classmate or friend.

1 2 3 4 5 6 7

質問33：私は大抵（たいてい）、授業のため勉強する時は集中できる場所で勉強する。

I usually study in a place where I can concentrate on my course work.

1 2 3 4 5 6 7

質問34：授業の教科書や教材を読む時（読みに）集中するために質問をつくる。

When reading for this course, I make up questions to help focus my reading.

1 2 3 4 5 6 7

質問35：クラスの勉強をしていてしばしば怠慢になったり飽きてしまったりして、計画したことが終わる前にやめてしまうことがある。

I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do.

1 2 3 4 5 6 7

質問36：授業で聞いた事や読んだ事柄が自分にとって納得がいくかよく自問自答する。

I often find myself questioning things I hear or read in this course to decide if I find them convincing.

1 2 3 4 5 6 7

質問 37 : 取っている授業の勉強をする時、教材を声に出していってみる。

When I study for this class, I practice saying the material to myself over and over.

1 2 3 4 5 6 7

質問 38 : 教材を学ぶのが難しくても、誰の助けも受けずに自分自身でやろうとする。

Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.

1 2 3 4 5 6 7

質問 39 : 教材を読んでいて混乱した時、もう一度そこにもどって理解できるように努力する。

When I become confuse about something I'm reading for this class, I go back and try to figure it out.

1 2 3 4 5 6 7

質問 40 : 授業の勉強をする時、(授業のため) 読んでいるものの内容や授業のノート

に目を通して最も重要なアイデアを見つける努力をする。

When I study for this course, I go through the readings and my class notes and try to find the most important ideas.

1 2 3 4 5 6 7

質問 41 : 授業のために自分の勉強時間を有効的に使っている。

I make good use of my study time for this course.

1 2 3 4 5 6 7

質問 42 : もし授業の教材を読んでいて理解が難しければ教材の読み方を変更する。

If course readings are difficult to understand, I change the way I read the material.

1 2 3 4 5 6 7

質問 43 : 授業の宿題をやり遂げるために同じクラスを履修している他の学生と一緒に勉強しようと心がけている。

I try to work with other students from this class to complete the course assignments.

1 2 3 4 5 6 7

質問 4 4 : 勉強をする時、授業で取ったノートや課題のリーディングを何度も読み直す。

When studying for this course, I read my class notes and the course readings over and over again.

1 2 3 4 5 6 7

質問 4 5 : 講義や教科書で理論、解釈、結論が提示された時、それらをサポートする
しっかりとした論拠があるかどうかを見極める努力をする。

When a theory, interpretation or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.

1 2 3 4 5 6 7

質問 4 6 : やっている事が好きでなくても、クラスで良い成績を収めるためには頑張る。

I work hard to do well in this class even if I don't like what we are doing.

1 2 3 4 5 6 7

質問 4 7 : 授業の教材を整理するために、簡単なチャート、図、表を作ったりする。

I make simple charts, diagrams, or tables to help me organize course material.

1 2 3 4 5 6 7

質問 4 8 : 授業のために勉強する時、授業を取っている学生達と授業内容を話し合う時間をしばしば取る。

When studying for this course, I often set aside time to discuss course material with group of students from the class.

1 2 3 4 5 6 7

質問 4 9 : 授業の教材をスタートポイントとして捉え、自分なりにその教科に関するアイデアを広げていく努力をしている。

I treat the course material as a starting point and try to develop my own ideas about it.

1 2 3 4 5 6 7

質問 5 0 : 私にとって勉強の計画／スケジュールをその通りに行なうのは難しい。

I find it hard to stick to a study schedule.

1 2 3 4 5 6 7

質問 5 1 : クラスのために勉強する時、講義、教科書、ディスカッション等で使用した 様々な資料を集める。

When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.

1 2 3 4 5 6 7

質問 5 2 : 新しい授業の教材をじっくり勉強する前に、まずそれらの教材がどう構成されているのかざっくりと目を通す。

Before I study new course material thoroughly, I often skim it to see how it is organized.

1 2 3 4 5 6 7

質問 5 3 : クラスで学んだ教材を自分が理解しているか確かめるために自分で自分に質問をする。

I ask myself questions to make sure I understand the material I have been studying in this class.

1 2 3 4 5 6 7

質問 5 4 : 授業でしなくてはならないことや、教員の教え方にあわせて勉強方法は変えるようにしている。

I try to change the way I study in order to fit the course requirements and the instructor's teaching style.

1 2 3 4 5 6 7

質問 5 5 : クラスのためにリーディングをしても、さっぱりわからないことが私にはよくある。

I often find that I have been reading for this class but don't know what it was all about.

1 2 3 4 5 6 7

質問 5 6 : 私が理解できない概念は教員に説明を求める。

I ask the instructor to clarify concepts I don't understand well.

1 2 3 4 5 6 7

質問 5 7 : クラスで学ぶ大切な概念を覚えるためにキーワードの暗記をする。

I memorize key words to remind me of important concepts in this class.

1 2 3 4 5 6 7

質問 58 : 授業の内容が難しいとやめてしまったり、簡単のところだけをしてしまう。

When course work is difficult, I either give up or only study the easy parts.

1 2 3 4 5 6 7

質問 59 : 勉強をする時、ただ単に読むだけでなくトピック全体を考え、何を自分はそこから学ぶべきなのか判断するようにしている。

I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.

1 2 3 4 5 6 7

質問 60 : 可能な限りある科目で学んだ事を他のクラスと関連づけるようにしている。

I try to relate ideas in this subject to those in other courses whenever possible.

1 2 3 4 5 6 7

質問 61 : 授業の勉強をする時、講義ノートを復習し重要な概念をアウトラインする。

When I study for this course, I go over my class notes and make an outline of important concepts.

1 2 3 4 5 6 7

質問 62 : クラスのリーディングをする時、自分が既に知っていることとの関連づけをするようにしている。

When reading for this class, I try to relate the material to what I already know.

1 2 3 4 5 6 7

質問 63 : わたしには勉強する決まった場所がある。

I have a regular place set aside for studying.

1 2 3 4 5 6 7

質問 64 : 授業で学ぶ事柄に関連して持っている自分の考えを広げる努力をしている。

I try to play around with ideas of my own related to what I am learning in this course.

1 2 3 4 5 6 7

質問 6 5 : 授業のために勉強をする時、読んだ教材からの主要なアイデアや、講義からの概念を短くまとめる。

When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.

1 2 3 4 5 6 7

質問 6 6 : 授業で教材を理解できない時は、同じクラスの他の学生に助けをもらう。

When I can't understand the material in this course, I ask another student in this class for help.

1 2 3 4 5 6 7

質問 6 7 : クラスの教材を理解するために、教科書や講義で学んだことを関連づける努力をしている。

I try to understand the material in this class by making connections between the readings and the concepts from the lectures.

1 2 3 4 5 6 7

質問 6 8 : 授業の毎週のリーディングや宿題が遅れをとらないよう気をつけている。

I make sure that I keep up with the weekly readings and assignments for this course.

1 2 3 4 5 6 7

質問 6 9 : クラスで主張や結論を読んだり聞いたりする度に他の可能な主張や結論を考る。

Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.

1 2 3 4 5 6 7

質問 7 0 : 授業の重要な用語のリストを作りそのリストを暗記する。

I make lists of important items for this course and memorize the lists.

1 2 3 4 5 6 7

質問 7 1 : 私は授業にきちんと出席している。

I attend this class regularly.

1 2 3 4 5 6 7

質問 7 2 : たとえ授業の教材が退屈で面白くなくても終わりまでなんとかやり遂げる。

Even when course materials are dull and uninteresting, I manage to keep working until I finish.

1 2 3 4 5 6 7

質問 7 3 : 授業で助けが必要な時にクラスの誰に手伝ってもらえそうか考える。

I try to identify students in this class whom I can ask for help if necessary.

1 2 3 4 5 6 7

質問 7 4 : 勉強をする時、どの概念を自分は理解していないのか判断しようと試みる。

When studying for this course I try to determine which concepts I don't understand well.

1 2 3 4 5 6 7

質問 7 5 : 他の活動が理由で授業のため十分に時間を割けないことがよくある。

I often find that I don't spend very much time on this course because of other activities.

1 2 3 4 5 6 7

質問 7 6 : 授業のため勉強する時、各勉強時間で自分のすることに方向性をもたせるためゴールを自分で設定する。

When I study for this class, I set goals for myself in order to direct my activities in each study period.

1 2 3 4 5 6 7

質問 7 7 : もしクラスでノートを取っていて混乱したら必ず後でそれを整理する。

If I get confused taking notes in class, I make sure I sort it out afterwards.

1 2 3 4 5 6 7

質問 7 8 : テスト前に自分のノートや読んだものを復習する時間がほとんどない。

I rarely find time to review my notes or readings before an exam.

1 2 3 4 5 6 7

質問79：授業のリーディングから得たアイデア等は、クラスの他の活動例えば講義やディスカッションに適応できるか試みている。

I try to apply ideas from course readings in other class activities such as lecture and discussion.

1 2 3 4 5 6 7

Appendix C
Translation into English of Japanese Students' Reflections

Session 1

Student's Reflections: Content of Training

- Well summarized.
- Meaningful learning.
- Reminded one of a Japanese animated character; also commented that "planning" time log works.
- Explanation was very concrete.

Students' Reflections: About Goals

- Good to learn the background of the importance of setting goals.
- Learned setting up goals concretely can become the energy to learning.
- Good to learn practically about setting goals since I never considered it.
- A section of training dealing with three effects of goals will be useful.
- Learned that goals affect my progress.
- Personally, setting up short-term goals is more important than setting up long-term goals.
- Understood how important setting up short-term goals was in order to attain long-term goals.
- Understood the importance of evaluating situations that I'm in order to set up goals.
- Training went fast for me.
- It seems that you need to be serious to become self-regulated.
- I've already practiced and used setting up goal strategies concretely in my studies so this is nothing new to me.

Session 2

Students' Reflections: Content of Training

- The content of training was something I often think and use.
- I generally understood the content.
- I've learned this type of information a bit before. Interesting.

Students' Reflections: Knowing Myself

- Learned that it is more important to know your own abilities and difficulties of a task than considering test results.
- Considered how my thinking and attitude ought to be is significant.
- Concept of self-efficacy is significant in order to reflect myself.
- Learned the importance of evaluating my ability.
- Learned the importance of knowing myself.
- Important to know my ability, to know the purpose, to know the reason why of the purpose, to know where I stand.
- Like to evaluate myself accurately and to take steady steps.
- Like to understand my capability and to put in more study hours.
- Self-efficacy is new to me; maybe I don't understand what I am exactly capable of or not.
- Today's session was a time for me to know what I should seek and improve.
- I feel I learned what my motivation is.
- Like to find out where I precisely stand and clarify the reasons why I study.
- Like to find out my self-efficacy.
- Pace was fast for me; need more time to think deeper.
- Terminology was a bit difficult.
- Some sections I'd like to learn more.
- My own efforts must improve; I have no future.
- For me to be motivated was equal to my effort.
- I've realized that I always put difficult subjects and hard work at the end/last.

Session 3

Students' Reflections: Content of Training

- Very practical content and easy to apply.
- Explanation was good.
- Explanation was good.
- Explanation was good.

Students' Reflections: Time, Environment, & People

- I worked full-time before and know the importance of time management, but it is also important in my studies.
- I've been thinking my time management is not under control. Good to learn the importance of it.
- Time management is very important. I've taken it too lightly.
- Finding "gap hour" should help me to study effectively.
- I sometimes receive peer support, but never from any instruction outside classroom.
- I need to learn how to write a report outside of the classroom.
- Support is important, but not co-dependently.
- Time, environment, support—need to handle well.
- My schedule is really tight.
- It was helpful to write down my weekly schedule.
- Like to reorganize my daily life.
- Like to plan a schedule, to organize environment, to have good friends and profs in order to progress.
- Like to visualize my free time weekly
- Eating and sleeping is important.
- Like to have all information in PowerPoint.
- I'm lazy by nature so today's topic was painful.
- I put in lots of hours of studying, but my life seems to be dull.

Session 4

Students' Reflections: Content of Training

- It was good to learn practical issues.
- I learned for academics. It's not only for learning, but also important to look at health, values, and human relations.
- Training session has motivated me to do well in school, but I'm not sure if this motivation is genuine.
- Thank you for the opportunity to learn that life issues matter to college learning.
- Training session gave me a time to rethink my study habits.

Students' Reflections: Communication and Managing Myself

- Good information regarding learning and communication.
- Learned that it is crucial to know my communication ability.
- I thought active listening is very important in communication. Just telling what I think is not good communication.
- Learned life habits matter in my college life. Want to know more.
- We must sleep at night.
- My life is balanced.
- Eating is the base of our life. I've been careful with it. Good to confirm what I practice.
- I didn't know that managing and taking care of my health is that important.
- I'd like to have rhythm in everyday life.
- I learned what I lack in managing myself.
- Like to learn more about delay of gratification.
- Delay of gratification was interesting.
- Delay of gratification is important. I'd like to learn more.
- I'd like to develop balanced inner tool and external tool.

Appendix D

Student Recruit Poster for Comparison Group

in Japanese with English Translation

学習スキルトレーニングセッション ～全4回、1,2年生対象～ 参加者募集

クラスの目的：
学習におけるモチベーションと学習スキルの開発
セッションの時間：1週間1回、1時間のセッションを4回
※全セッション通して参加ください

		内容
6/20 (水)	1	自己調整学習のモデルの紹介、 ゴール設定の大切さ
6/27 (水)	2	内的動機づけと外的動機づけ
7/4 (水)	3	時間の管理の大切さ
7/11 (水)	4	学習におけるセルフコントロール の方略

講師：杉谷乃百合先生
場所：キアラ館アッパールーム 4限または5限の時間
先着 40名 下記にお申し込みください

問合せ：キリスト教センター事務局 e-mail: Kiara@icc.ac.jp

杉谷乃百合先生 プロフィール
東京基督教大学、准教授
専門分野：宗教心理、教育心理
教会：日本ナザレン教団 昭和町教会
主な学歴：ノースウェスト・ナザレン・カレッジ教会音楽科、
ミズリー大学修士(教育研究、教育心理)、
ナザレン神学院修士(宗教教育学)
担当科目：心理学、キリスト教教育、Psychology I、
インターンシップ



INTERVENTION TRAINING SESSION
あなたの大学生活を豊かにする4回クラス 6月20, 27日&7月4, 11日

STUDY SKILL TRAINING SESSION

4 sessions for Freshmen & Sophomores

PARTICIPANTS NEEDED!

PURPOSE OF SESSIONS:

To develop study skill & motivation for learning

SCHEDULE OF SESSIONS:

One hour session, once a week, 4 week-long

*Need students who can participate all sessions

		CONTENT
6/20(Wed)	1	Introduction of academic self-regulation Importance of goal setting
6/27(Wed)	2	Intrinsic motivation & Extrinsic motivation
7/4 (Wed)	3	Importance of time management
7/11(Wed)	4	Strategies for improving self-control

INSTRUCTOR: Prof. Noyurisugitani

LOCATION: Kiara Hall, Upper Room, 4th & 5th period

40 STUDENTS NEEDED

CALL or E-mail: Christian Center Office, Kiara@icc.ac.jp

PROFILE OF INSTRUCTOR:

Noyuri Sugitani, Tokyo Christian University

B. A. in Church Music from Northwest Nazarene University

M. A. in Ed. Psych from Missouri University

M.R.E. in Religious Ed. from Nazarene Theological Seminary

Appendix E

Informed Consent Form

INFORMED CONSENT

同意書

The Motivated Strategies for Learning Questionnaire (MSLQ)

「学習のモチベーション方略に関する質問票」(MSLQ)

Investigators:

Noyuri Sugitani, M.Ed., Principal Investigator, Certificated Teacher, and Doctoral Candidate

Dr. Christopher A. Sink, Dissertation Chair

Principal Investigator: (phone) +81 0476 46 1131 (email) sugitn@spu.edu

Dissertation Chair: (phone) 206 281 2453 (email) csink@spu.edu

PURPOSE

目的

You are invited to take part in a research study. The purpose of this study is to investigate the effect of self-regulated learning strategies training and the effects of gender on college students' academic self-regulation development. Participants will complete a questionnaire called the Motivated Strategies for Learning Questionnaire (MSLQ). There will be approximately 80 college students who will participate.

皆さんは研究の参加へ招かれています。この研究の目的は、自己調整学習方略のトレーニングが日本の大学生の自己調整学習の発達に効果を及ぼすか、また、そのトレーニングにおける性差があるかを調査することです。参加者には自己調整学習方略のトレーニングに参加していただき、「学習のモチベーション方略に関する質問票」(The Motivated Strategies for Learning Questionnaire ; MSLQ)と呼ばれるアンケートに答えて頂きます。この調査では、約80名の大学生の参加を予定しています。

PROCEDURES

プロセス

First, you will be invited to participate in the research study.

Next, you will be contacted to determine a time to take the questionnaire.

Finally, you will be invited to hear the results of the study.

この研究への参加プロセスは、1) 研究参加への呼びかけ、2) アンケート記入の日時の指定、3) 後日の研究結果報告、となります。

RISKS and DISCOMFORTS

リスクと不快性

There are no foreseeable risks beyond those found in everyday life.

このアンケートは、みなさんの日常生活におけるリスクや不快性は含みません。

BENEFITS

利点

The study could benefit you by enhancing your understanding of your learning strategies. This study will also help others evaluate the questionnaire.

この研究は、皆さんの学習方法を理解する助けとなりうる利点があります。また、この研究により「学習のモチベーション方略に関する質問票」(The Motivated Strategies for Learning Questionnaire)が他者に評価される助けにもなります。

PARTICIPATION AND ALTERNATIVES TO PARTICIPATION

参加／不参加に関して

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at anytime without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection has been completed, your data will be returned to you or destroyed. Likewise, the Principal Investigator may terminate your participation in the study at any time.

この研究への参加は自由です、つまり、参加を否む事ができます。参加を決めた場合も、途中で不参加を希望しても罰せられることはありません。アンケートの記入途中で不参加を希望する者のアンケートは破棄します。同様に、研究者が参加者に辞退をお願いする場合もあります。

CONFIDENTIALITY

守秘性

The information in the study will be kept confidential. Data will be stored in a locked file cabinet and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study. Your de-identified data may be used in future research, presentations, or for teaching purposes by the Principal Investigator listed above.

この研究で得られた情報は、大切に扱われます。この研究に関わる担当者のみ情報は開示され、アンケートは鍵のかかるキャビネットに保管されます。この研究では、口頭でも書面でも皆さんの個人情報を使用されません。主任研究者（杉谷）がこの研究後、皆さんの個人情報を省いた上でアンケートのデータを利用する可能性はあります。

SUBJECT RIGHTS

参加者の権利

If you have questions at any time about the study or the procedures, (or you experience adverse effects as a result of participating in this study,) you may contact the Principal Investigator, Noyuri Sugitani, by phone 0476 (46) 1131 or email sugitn@spu.edu. If you have questions about your rights as a participant, you may contact the SPU Institutional Review Board Chair at 206-281-2174 or IRB@spu.edu.

もし、この研究に関して、またそのプロセスに関しての質問（または、この研究に参加後に発生した不都合な影響）がある場合、主任研究者（杉谷）に電話（0476-46-1131）又はEメール（sugitn@spu.edu）でコンタクトください。もし、参加者としての権利に関して質問がある場合は、SPU IRB担当

(電話 : 206-281 2174、メール : IRB@spu.edu) にコンタクトください。

CONSENT
同意書

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in this research project and agree to participate in this study. In no way does this waive your legal rights or release the investigators, sponsors, or involved institutions from their legal and professional responsibilities.

この同意書にサインをすることにより、この研究の趣旨を理解し、この研究に参加することを同意したことになります。この同意書は、参加者の法的権利の放棄を意味せず、また、研究者、協同者、関連機関の法的且つ専門家としての責任を免除はしません。

I have read the above information and agree to participate in this study. I have received a copy of this form.

私はこの同意書を読み、この研究に参加することに同意致します。このフォームのコピーを受け取りました。

Participant's Name (print) 参加者名 (楷書) _____	Researcher's Name (print) 研究者名 (楷書) 杉谷乃百合
Participant's Signature 参加者サイン _____	Researcher's Signature 研究者サイン _____
Date 日付 _____	Date 日付 _____

Copies to: Participant, Principal Investigator

