Using the Online Course to Promote Self-regulated Learning Strategies in Pre-service Teachers

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Abstract

The purpose of this study was to investigate the significance of using goal planning and weekly monitoring and evaluation forms within an online class to promote the use of self-regulated learning strategies. The relationship between student academic achievement and the use of materials to promote self-regulated learning was also studied. The subjects were 28 pre-service teachers taking two separate online sections of an education course entitled Educational Assessment and Measurement. Several forms were designed to prompt learners to reflect on their use of specific self-regulatory activities that achieving students are purported to use to learn academic material (Schunk, 1990). It was hypothesized that requiring learners to set and manage goals throughout the length of the online course would promote the use of self-regulated learning strategies. It was also hypothesized that supporting learners in focusing on the behavioral, motivational, and metacognitive aspects of their learning processes in an online class would result in higher achievement at the end of the course. The findings supported the hypothesis that there was a relationship between the use of goal analysis forms and evaluation and management forms to develop self-regulatory skills in pre-service teachers taking an online course. The results of the study did not support the hypothesis that the use of goal analysis forms and evaluation and management forms would result in higher average quiz scores for pre-service teachers taking an online course.

Introduction

Many education courses traditionally delivered within the confines of brick and mortar classrooms are now being offered online. If schools of education are to continue to utilize online learning technologies to deliver instruction to pre-service teachers, then perhaps it is prudent to understand more clearly how to optimize the methods used to deliver instruction online. If we are going to teach using online technologies, then we are going to have to learn to adapt our teaching methods to the new opportunities offered by such technologies as opposed to adapting the technologies to the teaching practices used in our traditional environments.

Online technologies could offer us the opportunity to do more than simply teach our content matter, but can also be used as a means to develop students' thinking practices. In a time when student progress and teacher ability are being questioned, it is important that colleges of education look for new ways to improve the performance of teachers in future classrooms. One way that teacher performance can be improved is by teaching future teachers to manage their own learning process through the setting and achievement of personal goals. Zimmerman (1986) defined this process of becoming metacognitively and behaviorally active in one's own learning as self-regulated learning

(SRL). Through the use of SRL strategies, people are able to navigate unstable and unfamiliar environments often created by a revolving door of policies, students, and technologies within the school system.

Although theories vary in regard to the processes and strategic actions that create and support self-regulated learning, most characteristics of self-regulated learners are common across the majority of theoretical approaches. Metacognitive strategies used by self-regulated learners include planning, setting goals, monitoring actions, and evaluating progress. Motivational processes include high self-efficacy, self-attributions, and intrinsic interests in the task (Schunk, 1990; Zimmerman, 1989). Behavioral processes include managing the environment in order to optimize learning experiences. Managing the environment includes choosing, adapting, and creating the environment for learning (Zimmerman & Martinez-Pons, 1986). Schunk (1990) lists attending to instruction, processing and integrating knowledge, rehearsing information to be remembered, and developing and maintaining a positive self-efficacy as important goal directed activities that learners use throughout the learning process. Self-regulated learners optimize the motivational, behavioral, and metacognitive processes using a variety of strategies. Self-regulated learning strategies are the actions and processes used to acquire information and skills. These strategies are purposeful and deliberate, and chosen by the learners as an appropriate solution to attaining academic goals (Zimmerman, 1990).

Review of the Literature

Teaching Self-Regulation

Setting goals and managing the realization of these goals through the purposive use of specific processes, strategies, and responses are the main components of SRL as defined by Zimmerman (2001). Research supports the idea that self-regulation skills can be taught, and once used, will be predictive of academic success (Pintrich & DeGroot, 1990; Zimmerman, 1990). Skills which lead to SRL are not innate personality traits and can therefore be learned through experience and self-reflection. Boekaerts (1997) asserts that although SRL can be complex, it can be taught. Although self-regulation does not occur overnight, there are numerous strategies instructors can use to promote effective self-regulation in learners.

Most theoretical approaches to teaching learners to become self-regulated focus on three primary issues: planning, monitoring, and evaluating the behavioral, metacognitive, and motivation processes relevant to learning. Metacognitive strategies used by self-regulated learners include planning, setting goals, monitoring actions, and evaluating progress. Motivational processes include high self-efficacy, self-attributions, and intrinsic interests in the task (Schunk, 1990; Zimmerman, 1989). Behavioral processes include managing the environment in order to optimize learning experiences. Managing the environment includes choosing, adapting, and creating the environment for learning (Zimmerman & Martinez-Pons, 1986).

Learners must understand how to develop appropriate goals that are neither too simple nor too difficult. If the goals are too simple, learners will not develop a high self-efficacy for the task. If the goals are too difficult, learners will progress too slowly toward the goal. Schunk (2001) states that helping learners mentally explicate learning

goals can aid in their judgment of progress and self-efficacy toward a learning task. The existence of goals is also shown to motivate and help learners understand their capabilities related to goal completion.

Monitoring progress towards goals is another important metacognitive strategy and is often done through selective attention, rehearsal, elaboration, and structuring. Learners must desire to attain the long-term goal and must be prepared to overcome temptations along the way. Self-regulation requires that learners forego short-term gratification in an effort to achieve long-term goals. This task requires both the delay of gratification and self-confidence (Mischel & Mischel, 1983). If self-confidence and the ability to delay gratification are lacking in an individual, it is likely that any attempts to self-regulate will fail.

Teaching self-regulation should also include ways to monitor strategy use (Harris, 1990) Monitoring strategy use often involves metacognitive regulation. Metacognitive regulation refers to a learner's awareness of what is known and how to regulate that knowledge. The concept of knowing what one knows is commonly referred to as knowledge of cognition. Knowledge of cognition can include declarative, procedural, and conditional knowledge. The regulation of knowledge can include planning, prediction, monitoring, testing, revising, checking, and evaluating activities (Hacker, n.d.). Self-regulated learners are aware of the reality of their knowledge, of what they do and do not know. They are aware of what knowledge they need to gain in an effort to reach their learning goals. The learners act in a deliberate and planful way to obtain, store, and retrieve the knowledge they need. When self-regulated learners need information, they actively engage in behaviors allowing them to gain knowledge and use it for appropriate learning goals. Using metacognitive activities, self-regulated learners are purposeful, strategic, and persistent in pursuing their goals (Purdie, Hattie, & Douglas, 1996). Using metacognitive processes, self-regulated learners adjust the difficulty of the task to create an intrinsically motivating endeavor. Wolters, Yu, and Pintrich (1996) found negative patterns of motivation, cognition, and performance contributed to a lack of self-regulation and task value. They view the acquisition of knowledge as a controllable system of processes (Zimmerman, 1990; Zimmerman & Martinez-Pons, 1986).

A learner who has learned to regulate learning approaches tasks in a cyclical process of monitoring their learning methods and strategies. Through evaluation, they make appropriate changes to their behaviors and self-perceptions (Zimmerman, 1989). Through the use of a self-oriented feedback loop, Zimmerman describes how learners monitor the effectiveness of their strategy selection and use as they attempt to achieve academic success. The operant theorists attribute the use of the feedback loop to self-reinforcement, while other theorists, such as the social phenomenologists, attribute the feedback loop to an individual's perception of self. Regardless of the theoretical basis for the use of the feedback loop, most definitions of self-regulated learning include this metacognitive activity (Zimmerman, 1990).

Boekaerts (1997) believes that effort plays a large role in learners' initiatives to self-regulate. Effort is involved in both cognitive and motivational efforts to self-regulate. Effort can be both quantitative and qualitative in nature. Quantitative effort refers to the time allocated to a strategy use while qualitative effort refers to the amount of energy expended to process the material (deep level processing). The value learners attach to a

task and their self-efficacy affect the effort learners exert towards a task. Self-regulated learners make the effort to set goals and reach them, and they are motivated to do so (Pintrich & DeGroot, 1990).

Wlodkowski (1999) defines motivation as the processes that arouse and instigate behavior, give direction and purpose to behavior, continue to allow behavior to persist, and lead to choosing or preferring a particular behavior. Self-regulated learners have the desire to designate, manage and complete a learning task. Most theories surrounding self-regulated learning attempt to explain how and why learners choose to use various strategies. The operant theorists attribute motivation to external reward factors such as approval (Mace et al., 2001), while the phenomenologists attribute motivation to issues related to self, such as self-actualization (McCombs, 2001). Regardless of the reasons that learners choose to motivate, most researchers agree that a strong link exists between self-regulated learning and motivation.

The process of SRL also involves self-reflection. Learners use self-reflection as a way to evaluate the instructional learning experience. Reflection involves reviewing things that happened during the learning experience. Chi (1996) and Chi, deLeeuw, Chui, and La Vancher (1994) investigated the area of self-reflection as a means to promote learning. Their research in the area of self-reflection and explanation found that these processes facilitate the integration of new knowledge into existing schemas. They developed a series of steps that have been successfully utilized by tutors to promote reflection. These steps are: (a) asking initial questions, (b) eliciting preliminary answers from learners, (c) providing feedback from tutor, (d) scaffolding between tutor and learner, and (e) assessment by tutor of reflection process. Van den Boom (2000) adopts and modifies this tutoring process using online technologies such as email, chats, and netmeeting

Social elements are also important to the use of self-regulative learning strategies. Collaboration with other learners is seen as a valuable resource. Self-regulated learners seek help and clarification when necessary. The perceptions and views of others are viewed as important components to the learning process. These views are used to construct meaning through creation, debate, sharing, and revising (Rochester Institute of Technology, 2000). They understand how to use and allocate available environmental resources both human and otherwise. They feel control over the learning environment. Self-regulated learners can overcome mental, social, and environmental obstacles to learning (Zimmerman, 2001). The self-regulated learner is not detoured by poor teaching or unclear text; they find alternative ways to gain the necessary knowledge and skills.

Motivation is another key element of SRL. All learners have the option not to self-regulate, and they may decide not to if they feel that the rewards of doing so are insufficient (Zimmerman, 1990). Understanding learners' motivations to self-regulate is a key factor in teaching. Most theoretical explanations of SRL include a discussion of the relationship between SRL and motivation. Pressley and Ghatala (1990) show that students must feel there are benefits to making efforts to self-monitor. Theoretical attempts to explain why learners choose to self-regulate vary from theory to theory. The operants claim that motivation results from external factors while cognitively oriented theories focus on less tangible factors contributing to learner motivation to self-regulate (Zimmerman, 1990). Regardless of the position taken, attempts to train learners to self-

regulate should not be independent of attempts to understand the motivational factors that exist. Learners who are motivated to learn material are more likely to use appropriate strategies that will allow acquisition. Helping learners develop intrinsic motivations for a task can lead to more cognitive engagement in the classroom (Pintrich & De Groot, 1990). Fostering the belief in learners that learning is often hard and knowledge is not absolute can support efforts to motivate as can the provision of tasks that allow learners to experience success (Pressley, 1995). Learners should also be provided with the opportunity to control the learning situation by developing goals, being allowed to control progress towards these goals, and evaluating their success at attaining these goals (Perry, VandeKamp, Mercer, & Nordby, 2002).

In conclusion, SRL can be taught. Attempts to promote self-regulation in the classroom should include a focus on behavioral, metacognitive, and motivational strategies. Instructors can promote the development of SRL by incorporating opportunities for learners to focus on goal development and attainment. Instructors should be prepared to offer feedback on the use of SRL related strategies. Instructors should help learners understand why, when, and how often to use the strategies. Furthermore, instructors should understand that learners' abilities to self-regulate might vary according to the task due to the motivational aspect of SRL use.

Self-Regulation in the Online Environment

Learning in the online environment is highly dependent on an individual's ability to direct and manage the learning process. The online environment requires that learners set goals and develop appropriate methods for realizing goals. Learners must effectively manage both time and resources. If the technology employed in an online environment is also new to the learners, familiarity will have to be gained in addition to the course content. Learning technology in a solitary environment can be a frustrating endeavor and one that often requires learners to solicit help from appropriate sources. The online environment requires more of learners' minds than the passive absorption of knowledge from the instructor's brain. Online learning involves choice. Learners must choose to go to class, when to go to class, and, once in class, learners must monitor the learning process as they attend to information delivered over the Internet. The hypermedia environment creates the additional problem of remaining focused on academic goals and the management of resources. Learners must exercise judgment when interacting with endless amounts of data available in the online learning environment (Carrier, 1984).

It is for these reasons that the online environment is an ideal place to study the development of SRL strategies. In a study examining learner success with computer-based instruction, Yang (1993) found that SRL skills were important variables in the amount of information learned by learners, the control learners exhibited over their learning environment, and the amount of time learners needed to complete a task. Cennamo, Ross, and Rogers (1999) describe a Web-enhanced course that incorporated a system of activities, support tools, and learning strategy examples to aid learners in self-directing their learning process. They report that the activities and resources provided to learners enabled them to obtain skills needed to become self-regulated learners. Cennamo et al. (1999) list three actions instructors can apply to online courses in efforts to

encourage self-regulatory skills. First, instructors can facilitate goal setting through the use of calendars and automatic messaging systems. Second, instructors can support learners' reviewing strategies through inclusion of quickly accessible materials for review. Printer friendly notes pages low on graphics are a good format for review materials. Finally, instructors should include online assessments that learners can do on their own as often as possible. Often these can be found through textbook websites.

Not only should learners develop self-regulatory skills to efficiently manage the online classroom, but these skills are also needed for a continuous life of learning and personal development. In her discussion of creating effective learning environments using the Web, Slay (1997) discusses the Internet as an effective tool for preparing learners to become lifelong learners within their profession. Slay lists six factors that prepare learners with the skills to become lifelong learners; four of these strategies relate directly to self-regulated learning: (a) Become information literate by locating, managing, and evaluating information, (b) understand limitations of and evaluate personal knowledge, (c) understand personal strengths and weaknesses as well as preferred learning style, and (d) have knowledge of a range of strategies to achieve learning goals.

Teaching Pre-service Teachers Self-Regulation in the Online Classroom

Wang (2004) describes how vicarious learning experiences and goal setting influence pre-service teacher's attempts to integrate technology into the classroom. Relying on research which links self-efficacy to the degree that teachers integrate technology into the classroom (Oliver & Shapiro, as cited in Wang, 2004; Schunk, 1990), Wang examines the impact of vicarious learning experiences and goal setting on teacher technology integration. Vicarious learning experiences included the modeling of technology use via multimedia. Wang concludes that pre-service teachers engaging in both the identification of learning goals and vicarious learning experiences related to technology integration, such as an online course, increased judgments related to computer self-efficacy. Wang found that both vicarious learning experiences and goal setting were important in the development of pre-service teacher technology integration. The technological nature of the online classroom offers instructors the opportunity to vicariously model the use of various multimedia tools while at the same time, presenting the content of the course.

Web-based course management systems can be used to support instructional strategies, which learners can use to acquire content knowledge and process knowledge. Online interactive discussions and assignments can foster communication, coaching, and collaboration during the learning process. DeBourgh (2002) describes how online course systems can be designed to promote self-regulative strategies in learners. Through the use of weekly-standardized journals, DeBourgh follows a five-step process of cognitive modeling. These five steps include: (a) assessment of understanding; (b) incident description; (c) modeling of thinking processes, terminology, and critical analysis; (d) recognition of patterns and knowledge links; and (e) critical questioning about the meanings of clinical events as well as self-identified areas of strength and needed development. Along with an increase in written communication skills, DeBourgh found that this method also increased the learners' strategy use and computer skills.

This study was designed in an effort determine whether or not pre-service teachers could be taught to use SRL strategies in an online classroom and, once learned,

whether these skills would relate to their academic achievement. Future steps can be taken to insure these skills transfer to the pre-service teachers' future integration of classroom technologies as suggested by Wang (2004). .

Purpose of the Study

The purpose of this study was to investigate the significance of using goal planning forms and weekly monitoring and evaluation forms within an online class to promote the use of SRL strategies in pre-service teachers. These forms were designed to prompt learners to reflect on their use of specific self-regulatory activities that achieving students are purported to use to learn academic material (Schunk, 1990). Learners were assisted in focusing on the behavioral, motivational, and metacognitive aspects of their learning processes. It was hypothesized that requiring learners to set and manage goals throughout the length of the online course would promote the use of SRL strategies. It was also hypothesized that supporting learners in focusing on the behavioral, motivational, and metacognitive aspects of their learning processes in an online class would result in higher achievement at the end of the course.

Statement of Problem

Online delivery has become a popular alternative to traditional classroom instruction provided to pre-service teachers. The problem that this study attempts to address is the relationship between pre-service teachers' use of goal planning and strategy monitoring and evaluation forms within an online course and the development of SRL skills. Secondly, this study will examine the relationship between the use of SRL skills and academic achievement.

Traditional classrooms have been used to successfully promote the development and use of self-regulative skills. Many education courses traditionally delivered within the confines of brick and mortar classrooms are now being offered online. If schools of education are to continue to utilize online learning technologies to deliver instruction to pre-service teachers, then perhaps it is prudent to understand more clearly how to optimize the methods used to deliver instruction online. The greater control over time, scheduling, and learning that college students have makes SRL especially appropriate at the college level of education (Pintrich, 1995).

By supporting student use of SRL strategies, colleges of education can promote the motivational, behavioral, and cognitive skills needed to become self-regulated learners. Schunk and Zimmerman (1998) state as follows:

> "An area that lends itself well to self regulation is *distance learning*, where instruction originates at one site and is transmitted to learners at distant sites….
> Self-regulation seems critical due to the high degree of student independence deriving from the instructor's physical absence. In particular, we recommend research on the type of self-regulatory strategies that allow good distance learning" (p. 230).

This study sought to accomplish some of Zimmerman's vision for future research in SRL by using the online classroom as a medium to promote self-regulatory skills in pre-service teachers taking online education courses. Through the acquisition of these skills,

it is hoped that teachers will be more prepared to develop the ideal learning environment of the 21st century classroom. Through the use of SRL strategies, teachers can be encouraged to identify new and beneficial learning and teaching technologies, set goals for the inclusion of these technologies into curriculums, and integrate these technologies for the appropriate learning and teaching tasks. It is also hoped that the development of self-regulatory skills support pre-service teachers successes in future online courses.

Methods

Participants

There were two groups of participants (N = 28). The first group consisted of online learners taking section 801 of an undergraduate course entitled Educational Testing and Measurement (n = 15). The second group consisted of online learners taking section 802 of an undergraduate course entitled Educational Testing and Measurement (n = 13). The average age of all participants was 27 years. In the pre-course survey, most students (77%) rated themselves average to above average computer users agreeing that they used a computer for a variety of daily tasks such as email, coursework, and information searches. Of the participants, 50% had taken an online class before enrolling in the online Educational Testing and Measurement course. All participants in the study were pre-service teachers at various stages of the teacher education program. There were 4 men and 24 women. Two men were in each section.

Procedure

At the beginning of the course, all students were pretested on their current use of learning strategies. The Motivated Strategies for Learning Questionnaire (MLSQ) developed by Pintrich, Smith, Garcia, and McKeachie (1991) was used to measure these skills. At this time, students were also asked several demographic questions which were later used as controls for the study. These included gender, age, online experience, and general computer experience (See Appendix A). Prior review of the literature related to SRL had suggested that these factors might contribute to learners' use of self-regulated skills.

At the beginning of the course, the experimental group members were required to identify their goals for the course and the steps necessary to reach those goals using the Goal Planning Form (See Appendix B). In order to guide students in this process, the Goal Development Example was provided (See Appendix C). The participants in the experimental group manually completed the Daily Progress Monitoring Chart (See Appendix D). The information from the Daily Progress Management Chart was transferred to the Weekly Progress Monitoring Input Form (See Appendix E) at the end of each week, submitted online, and then retrieved by the instructor. Participants in the experimental group were also required to submit the Weekly Evaluation Form (See Appendix F). The control group did not complete or submit any of the above forms.

At the end of the course, participants in both sections were post tested on the MSLQ, and their average quiz grade was calculated. Data from the MSLQ posttest measure was

used to explore the first research question: Do pre-service teachers using goal planning and strategy monitoring and evaluation forms in an online course score significantly higher on their perceived use of self-regulation strategies than students not using the forms?

The averages of the two quiz grades students received during the course were used to explore the second question in this study: Do pre-service teachers using goal planning and strategy monitoring and evaluation forms in an online course achieve significantly higher average quiz scores than students not using the forms?

Results

The study utilized a quasi-experimental non-equivalent comparison group research design and the statistical data collected were used to answer each of the research questions. The general research questions were:

1. Do pre-service teachers using goal planning and strategy monitoring and evaluation forms in an online course score significantly higher on their perceived use of self-regulation strategies than students not using the forms?
2. Do pre-service teachers using goal planning and strategy monitoring and evaluation forms in an online course score significantly higher on their average quiz grades than students not using the forms?

Prior to beginning the data analysis an internal consistency estimate of reliability was computed for the 50-question Motivated Strategy for Learning Questionnaire (MSLQ) pretest scores in the sample used in this study. A coefficient alpha of .87 showed the measure to have satisfactory reliability.

The full general linear model for the relationship between use of the worksheets and goal setting and MLSQ score (first research question) was run. The following control variables were not significantly related to the dependent variable, MLSQ score: age, general computer experience, online learning experience, and gender. Again, prior research had suggested a link between these variables and use of self-regulative learning skills. Showing no relationship to the dependent variable (MLSQ score), these variables were dropped from the equation and a one-way analysis of covariance (ANCOVA) was run. The dependent variable was the posttest score on the MLSQ and the independent variable was section. A preliminary analysis evaluating the homogeneity of slopes assumption indicated that the interaction between the covariate and the section independent variable was not statistically significant F (2, 24) = 1.05, MSE = .50, p = .37. The p for B_{A1} was significant, F (1, 25) = 8.31, MSE = .49, p = .01. The strength of the relationship between the worksheets and the participants' perceived ability to self-regulate in an online course was very strong, as assessed by the partial η^2 = .25, meaning that the goal analysis sheets and self-regulated worksheets accounted for 25% of the score variance on the posttest MSLQ. The means of the two sections' MSLQ scores, adjusted for differences on the pretest MSLQ, were as expected. Section one, which did not complete the goal analysis form or worksheets, had the smallest adjusted mean and section two, which completed the goal analysis form and worksheets throughout the course, had the largest adjusted mean.

The second relationship this study investigated was the relationship between pre-service teachers use of the goal planning and strategy monitoring and evaluation forms in an online course and their average quiz grades which were used as a measure of academic achievement in the course. Again, the variables age, general computer experience, online learning experience, and gender were not significantly related to the dependent variable and were dropped from the equation. A final one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between average quiz grades and section. The p for B_{B1} was not statistically significant, F (1, 23) = 1.91, p = .18. The strength of the relationship between the worksheets and quiz grade, as assessed by η^2, was not strong, with the worksheets accounting for 7.7% of the variance of the dependent variable.

Discussion

The findings of this study supported the hypothesis that there was a relationship between the use of goal analysis forms and evaluation and management forms to develop self-regulatory skills in pre-service teachers taking an online course. This finding supports prior research suggesting that self-regulation can be encouraged in traditional classroom settings using reflection and practice (Pintrich & DeGroot, 1990; Zimmerman, 2001). Cennamo, Ross, Rogers, and Crosby (1999) list three actions that can be taken in an online course to enable students to develop self-regulatory skills: facilitate goal setting, support students' reviewing strategies and, include online assessments that students can do on their own. By using these methods, participants in the experimental group of this study appeared to increase their ability to self-regulate as measured by the increase in the their scores on the final MSLQ.

With many future teachers enrolling in online courses, it is important to find ways to incorporate self-regulation development tools into these classrooms. Some studies suggest that learners in an online class are more likely to need self-regulation skills due to the often-solitary learning environment of the online classroom. The findings of this study suggest that online classrooms offer an opportunity for instructors to promote SRL strategy skills in future teachers. Further research needs to be done on how much exposure pre-service teachers need to SRL strategies before the transfer of these skills affects other courses and eventually future classrooms.

Although average quiz grades for students with higher self-regulatory skills were higher, they were not significantly higher than those participants in the control group who did not show to have increased their ability to use self-regulatory skills. Therefore, the findings in this area were not significant enough to support the literature that claims self-regulation leads to academic success (Zimmerman & Martinez-Pons, 1986). Perhaps as Pintrich and De Groot (1990) found, self-regulation is just one of many factors, such as self-efficacy and a positive learning environment, that when combined are likely to lead to higher academic success. Perhaps too, students need much more exposure to SRL before one begins to see a relationship to academic achievement.

Although using goal planning forms and weekly monitoring and evaluation forms within an online class did prove to significantly promote student self–perceived ability to use self-regulatory skills, teachers must determine whether or not adding to student and teacher workload is practical and/or beneficial. As the results indicate, the average quiz

grades for students did not improve as a result of developing self-regulatory skills. When participating students were asked how long it took them to complete the weekly worksheets, 54% (n = 7) of the class said it took them 5-10 minutes per week, 8% (n = 1) stated that it took them over 30 minutes per week. The instructor must decide whether the extra time needed to prepare, organize, and review the worksheets is worth the few minutes a week needed to create links to the surveys and assign credit for student completion.

Future desires to study SRL in the online environment explore the issue of feedback to students' use of SRL strategies. My current processes used to develop SRL skills do not include feedback to students on their use of the strategies. It has been shown that providing feedback to learners gives insight into possible flaws in efforts made towards self-regulation (Pressley, 1995). Also, using a more qualitative measure for SRL strategy use may offer some exciting findings. Threaded discussion and other asynchronous chat forums offer some possibilities for this.

In conclusion, the results of this study demonstrated a significant relationship between goal setting and reflective use of monitoring and evaluation forms in an online course. Findings support and contribute to the research on teaching self-regulation. The results did not find that an increased ability to use self-regulation skills significantly affected achievement as measured by average quiz grades. This study does not support the research that self-regulation affects academic achievement, as reported by Zimmerman, (1989) but it also does not negate it. The online environment appears to be an appropriate medium for supporting SRL skills in pre-service teachers. Instructors of pre-service teachers may want to explore further benefits of using the online class to develop SRL skills in future teachers.

Appendix A

Demographic and Pretest Questions

1. **Student Number**
2. **Which section of EPY are you in? It is very important that you are sure of this answer. You are either in section 801 or 802. Please check before answering this question.**
3. **Age?**
4. **Please select the choice which best describes your computer use.**
    - **a.** I have never used a computer.
    - **b.** I use a computer only to type papers.
    - **c.** I use a computer only for email and required course work.
    - **d.** I use a computer for a variety of daily tasks such as email, coursework, and information searches.
    - **e.** I use a computer for a variety of daily tasks such as those listed above and have experience with HTML and other higher-level computer skills. I am very experienced with a computer.
5. **Have you ever taken an online course? Yes __ No ___**
6. **Sex**

Appendix B

Goal-Planning Form

Directions:

After reading the syllabus and going over all the course requirements, think about what your goals are for this course. Fill in the form boxes below to list your goals. For each goal, specify the steps you will take to accomplish the goal.

Do not make your goals so broad that they will contain a lot of steps. For example, a goal of - Get an A in the course – would have many, many steps. Of course, you may want to get an A, and that is your ultimate goal but you need to break your goals down into smaller parts. **See Sample Course Goal Sheet**

First Name _____ Last Name_____Date

Student Number _____

Goals for this Course	Steps to Accomplish this Goal
1.	
2.	
3.	
4.	
5	
6.	

Appendix C

Goal Development Example
Sample Course Goal Development Form

Using a travel analogy may help you. My ultimate goal is to drive from Savannah, GA to San Diego, CA. Some goals and steps in the process could be the following. Note how each day is different depending on the daily goal.

Goals for this Course	Steps to Accomplish this Goal
1. Get to Montgomery the first day (about 30 miles)	1. Wake up at 8 a.m. 2. Be finished with breakfast by 9 a.m. 3. Start driving by 9:15 4. Eat lunch on the go about 12 5. Arrive in Birmingham about 3 p.m. and spend the night with friends
2. Get to Dallas the second day (about 600 miles)	1. Wake up at 5 a.m. and be driving by 5:30 p.m., get coffee 2. Eat breakfast on the go about 6 a.m. 3. Eat lunch on the go about 11 a.m. 4. Stop and rest about 2 p.m. and 4 p.m. 5. Arrive in Dallas about 7 p.m. and sleep in motel
3. Get to Odessa the third day (about 350 miles) Spend night and day with friends	1. Wake up at 7 a.m. and be driving by 7:30 p.m., get coffee 2. Eat breakfast on the go right away. Need that coffee. 3. Eat lunch on the go about 11 a.m. 4. Stop and rest about 2 p.m. and 4 p.m. 5. Arrive in Dallas about 4 p.m. and sleep wi friends and spend the day and next night
4. Get to El Paso on fifth day (about 250 miles)	1. Wake up at 8 a.m. and be driving by 10 a.r 2. Eat lunch at a restaurant 3. Stop and sight see along the way| 4. Arrive in El Paso whenever and sleep in motel
5. Visit a White Sands National Monument Park (about 100 miles)	1. Arrive at Park at 10 a.m. 2. Spend 3 hours (you really like it here, you desert rat!) 3. Go back to El Paso and spend night in motel, eat a nice dinner

Appendix D

Daily Progress Management Chart

Name _____ Date_____

Directions – Keep track of what you do during the week for this course. Fill in this chart for each week as you accomplish various course requirements. Use this chart to enter the data in the weekly progress monitoring form you complete at the end of every week.

1. Time spent studying – Keep track of the total amount of time. You can list as minutes or hours.
2. Number of pages read – List how many pages you read.
3. Assignment started – Indicate the assignment and when you began working on it.
4. Assignment completed – Indicate when it was completed.
5. Worked ahead on _____ - Indicate the assignment and when it is due.
6. Other – This is for you to keep track of anything else.

	Wed.	Thurs.	Fri.	Sat.	Sun.	Mon.	Tue.
Number of pages read							
Assignment started							
Assignment completed							
Worked ahead on _____							
Other							

Appendix E

Weekly Progress Monitoring Input Form

First Name _____Last Name_____Date

Student Number _____

Directions: Keep daily track of what you do during the week for this course on the Weekly Progress Monitoring Chart you downloaded. Transfer and submit the information here weekly on the day indicated by your instructor. (Download the Word file Weekly Progress Monitoring Chart)

Wednesday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Thursday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Friday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Saturday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Sunday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Monday

1. Time spent studying or working on assignments _____
2. Number of pages read: _____
3. Assignment started: _____
4. Assignment completed: _____
5. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Tuesday

1. Time spent studying or working on assignments _____
1. Number of pages read: _____
2. Assignment started: _____
3. Assignment completed: _____
4. Worked ahead: _____
6. Number of quality responses posted in threads: _____

Appendix F

Weekly Evaluation Form

Directions: For each question in Section 1, select the option button by the number that best fits your opinion, using the scale below to match your opinion. Also fill in your responses to the questions in Section 2.

0	Not at all
1	*Very little*
2	
3	
4	
5	Very much

First Name _____ Last Name _____ Date _____
Student Number _____
Semester _____
Week Ending_____

Section 1

1.I interacted with my instructor or another student.
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

2. I experienced trouble with my Internet connection.
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

3. How much reading did you do?
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

4. My instructor responded in a timely manner to my questions.
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

5. The amount of work that was required was reasonable.
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

6. How much time did you spend completing assignments?
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

7. How much effort did you put into your assignments?
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

8. How much did you learn?
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

9. I am satisfied with my progress this week.
Not at all __ (1) Very little __ (2) ___ (3) ___ (4) ___ (5) Very much ___

Section 2

10. What was the easiest part of this week's assignments?

11. What was the hardest part of this week's assignments?

12. What was the most confusing?

13. If you were to assign your grade for this week, what grade would you give yourself?

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