Fostering Self-Efficacy through Time Management in an Online Learning Environment

Krista P. Terry
Radford University

Peter E. Doolittle
Virginia Tech

Abstract

In this study, we investigated the use of a web-based tool designed to influence levels of student self-efficacy by engaging participants in a time management strategy. On a daily basis for 16 days, a total of 64 undergraduate and graduate students engaged in the web-based time management tool in which students set goals regarding how they planned to spend their time the next day and recorded how they spent their time the previous day. In addition, students received either daily or weekly feedback on their goal attainment in either a lean or rich format. This strategy encouraged participants to monitor their time management behaviors and engage in a self-regulated learning process. Results indicated that while engagement with the online time management tool resulted in increases in self-reported time management behaviors, there were no significant increases in student self-efficacy or self-regulated learning as a result of either daily or weekly feedback in a lean or rich format.

Introduction

Theories of both self-efficacy and self-regulated learning have been studied for a many years in a variety of academic, educational, and delivery contexts. Albert Bandura (1977, 1995, 1997) defines self-efficacy as one's belief in his or her ability to achieve certain outcomes by organizing and performing the actions necessary to do so. Bandura (1993) recommends that educators foster or facilitate increased levels of self-efficacy beliefs by teaching students self-regulated learning strategies. Various theories of self-regulated learning have thus emerged and have been discussed in relation to fostering positive learning strategies in which learners are aware of what they know, what they believe, and how the difference between the two affects learning and task performance (Winne, 1995).

Most recently, research has emerged that attempts to investigate specific strategies for fostering self-regulated learning in a variety of classroom environments, including traditional face-to face-instruction (Hofer, Yu, & Pintrich, 1998; Zimmerman, Bonner, & Kovach, 1996), distance or web-based instruction (Loomis, 2000), and blended or hybrid instruction (Cennamo, Ross, & Rogers, 2002; Kitsantas & Dabbagh, 2004, 2005; Whipp & Chairelli, 2004). Further, some of these studies have attempted to identify specific technology tools, or web-based pedagogical tools (Kitsantas & Dabbagh, 2004, 2005), when leveraged effectively, foster the development of self-regulated learning skills.

In their overview of research that has been conducted to enhance self-efficacy by fostering students' self-regulation and academic learning, Schunk and Ertmer (2000) call for the development of more interventions that address the dual purpose of enhancing students' self-efficacy for learning and the facilitation of self-regulatory strategies. This manuscript addresses

the call by adding to the current body of literature surrounding the use of web-based tools designed to engage students in the self-regulated learning processes to foster higher levels of academic self-efficacy. As such, this manuscript describes an experimental process in which students engaged in three self-regulated learning strategies: (a) goal setting, (b) time management, and (c) feedback by utilizing a web-based tool that was designed to intentionally engage them in the aforementioned self-regulated learning processes.

Self-Efficacy and Self-Regulated Learning

The construct of self-efficacy has been studied to determine issues related to how students learn and how they may or may not accept the shift of taking more responsibility for their learning (Bandura, 1997). Bandura proposes that the ability of people to bring about significant outcomes assists them with being able to predict such outcomes. Bandura has defined self-efficacy as referring to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (1997, p. 3). Bandura situates the construct of self-efficacy within the context of social cognitive theory, which is, in turn, based on the notions of *triadic reciprocal causation* and *human agency*. In relation to the social cognitive theory of triadic reciprocal causation, Bandura (1986, 1997) posits that personal factors (e.g., attitudes and beliefs), behaviors, and environmental events all influence each other and impact individuals' capabilities to perform in certain ways. For example, Marcia believes that she is very intelligent (personal factor) and thus chooses to engage in activities that require intelligence (behavior) such as a trivia or problem solving game. In addition, others playing this game may choose her first to be on their team (environmental factor), thus supporting her belief in her intelligence. Human agency refers to the control one has over influencing behavioral and environmental outcomes. For example, continuing with Marcia, her agency is evident in her choice to play intelligent games and her choice to believe that being chosen first reflects positively on her intelligence. In addition to investigating the processes through which self-efficacy interacts within one's cognitive and behavioral capabilities, Schunk and Pajares (2002) articulate sources from which self-efficacy beliefs can be constructed or developed such as familial and peer influences.

Additionally, Zimmerman's (1995a) work on self-regulated learning, self-efficacy and educational development seeks to identify strategies within the academic environment that can be used to develop and measure self-efficacy beliefs and determine behavioral outcomes. Specifically, Zimmerman cites the need for developing students' self-beliefs and self-regulatory capabilities to foster learning that creates students capable of self-education and the pursuit of lifetime learning goals. As such, Zimmerman developed a model of self-regulated learning that advocates engaging students in a cyclical process. This model includes three primary phases—*forethought*, *performance/volitional control*, and *self-reflection*—each phase consisting of several specific strategies (Zimmerman, 1998). Forethought is the phase in which beliefs that *precede* efforts to learn set the stage for learning to occur. The performance/volitional control phase represents the processes that occur *during* learning that affect the learner's concentration and performance. Finally, the self-reflection phase involves the processes that occur *after* learning which influence learner's reactions to the experience. Specific strategies that occur within each of the forethought, performance/volitional control, and self-reflection phases would include goal setting, time management, and feedback, respectively.

Forethought and goal setting. Goal setting is a specific strategy relevant to the forethought phase, and as such, it becomes a strategy for students beginning to engage in the self-regulatory process. Others who have studied goal setting as a strategy have investigated

characteristics of goals that maximize their viability as instructional tools (Bandura & Cervone, 1983). The characteristics that are important to the development and utilization of goals as a self-regulative strategy outlined by Schunk (1990) are goal specificity, goal proximity, goal difficulty and self-set goals. Specifically, Schunk (1990) identifies goals that incorporate specific performance standards as being effective in enhancing learning and activating self-evaluations. These specific performance standard goals promote self-efficacy as they allow learners to gauge their progress. Proximal, or short-term goals, result in increased motivation because learners are better able to gauge their progress toward achieving their goal (Schunk, 1983b). Additionally, difficult goals, as opposed to easy goals, and goals that are self-created have been found to have a positive effect on self-regulated learning and self-efficacy (Schunk, 1983, 1985). These goal characteristics, therefore, help inform strategy development within the forethought phase of the self-regulation process.

Performance/volitional control and time management. The second cyclical phase of Zimmerman's (1998b) model of self-regulation is that of *performance/volitional control*. One specific strategy of performance/volitional control is time management, a process that involves self-monitoring, and is a component that has been included in several programs related to student success and achievement (Hofer, Yu, & Pintrich, 1998; Zimmerman, Bonner, & Kovach, 1996). According to Zimmerman and Martinez-Pons (1992), to manage time effectively, students should set specific goals, attribute outcomes to strategy use, and feel efficacious to learn a task within the allotted time. Poor time management, however, may reflect deficiencies in behavioral, environmental, or personal self-regulatory processes. Zimmerman, Bonner, and Kovach (1996) created a strategy development program designed to assist students with developing time management strategies to increase perceptions of self-efficacy. The implementation of Zimmerman and et al. (1996) model aimed at developing self-regulated learners, has generated responses from students who have participated in the program citing behavioral changes that have led to higher levels of time management, academic achievement, and efficacy beliefs. Time planning and management was seen as an integral part of their learning strategies instruction and is listed as a primary goal in a program (Zimmerman, et al., 1996).

Self-reflection and feedback. The third process in Zimmerman's cyclical self-regulation model is that of *self-reflection*. In order to facilitate self-reflection during the self-regulation process, feedback is an essential strategy, as it provides attributional information (Schunk, 1981, 1983a), information related to self-efficacy (Gorrell & Capron, 1998; Schunk & Swartz 1993), and information related to time management (Smith & Steffen, 1994). Kulhavy and Stock (1989) have created a model of feedback use that includes three components: (a) presenting learners with a task to which they need to respond, (b) presenting feedback to the learners, and (c) presenting the original task again as a test item. This model provides learners with the opportunity to compare their performance to previous performance, thus allowing learners to self-monitor progress. Bangert-Drowns et al. (1991) elaborated on Kulhavy and Stock's (1989) work, emphasizing the construction of mindfulness as "a reflective process in which the learner explores situational cues and underlying meanings relevant to the task involved" (Dempsey et al., 1993).

In considering the development of specific interventions focused on facilitating the development of higher levels of self-efficacy by engaging participants in a self-regulatory process, a web-based intervention was constructed that focused on (a) goal setting as an forethought/strategic planning process; (b) time management as a performance/volitional control

process, and (c) feedback as a mechanism by which to encourage self-reflection and self-evaluation.

The web-based intervention, therefore, was designed to engage students in a process of setting goals and monitoring performance on time management related tasks. This study seeks to identify how web-based tools can be leveraged to engage learners in processes that will affect self-efficacy beliefs by encouraging and facilitating the self-regulation process.

Method

Overview

The present study addressed the development of self-efficacy beliefs through participation in a self-regulatory process based on Zimmerman's (1990, 1995b, 2001) social cognitive model and three specific self-regulation strategies: goal setting, time management, and feedback. Specifically, participants were assessed on their generally perceived self-efficacy, self-efficacy for self-regulated learning, and time management before and after engaging in a web-based tool that involved setting time management goals, reporting time management behavior, and receiving either rich or lean performance feedback (type of feedback) on either a daily or weekly schedule (schedule of feedback).

Participants and Design

Participants were 64 undergraduate and graduate students (43 female and 21 male) enrolled in an online graduate level educational psychology course at a large land-grant institution in the southeast. Of the total participants, 55 were enrolled in the course as graduate students, 44 Master's and 11 doctoral students, with 9 participants enrolled as junior or senior undergraduate students. Of the participants, 58 were white/Caucasian, 3 African American, and 3 Asian with a mean age of 31.1 years.

The effects of schedule of feedback (daily vs. weekly) and type of feedback (lean vs. rich) on generally perceived self-efficacy, self-efficacy for self-regulated learning, and self-reported time management behaviors were examined in a 2 (daily vs. weekly feedback) X 2 (rich vs. lean feedback) X 2 (pre-test vs. post-test) repeated measures design. The participants were randomly assigned to one of four groups (G1: weekly/lean; G2: weekly/rich; G3: daily/lean; G4: daily/rich) as they initially logged into the web-based time management tool.

Time Management Behavior

All participants monitored their time management behaviors on a daily basis for the 16 days of the study. Specifically, participants were asked, on a daily basis, (a) to set goals regarding how they planned to spend their time the next day, (b) to monitor how they actually spent their time the day before, and (c) to record both their goals and actual time spent using the web-based time management tool. Participants were asked to set goals and monitor time spent in four broad areas of time usage, including time spent on (a) academics and studying, including time in class; (b) personal and social matters, including child care and entertainment; (c) job related tasks, including traveling to and from one's job; and (d) sleeping, including nightly sleep and napping. Once a day, for two weeks, participants were required to enter their goals and actual time spent into the web-based time management intervention scaffold.

Schedule of Feedback

The schedule of feedback included both daily feedback and weekly feedback. Daily and weekly feedback, depending on a participant's group assignment, was provided for each of the four time management areas (i.e., study time, personal time, work time, sleep time). Each day during the course of the study, participants would log-in to the web-based time management tool and enter their time goals for the four time management areas for the next day and then their actual time spent on the four time management areas for the previous day. Participants in Groups 1 and 2, who were assigned to receive weekly feedback, received feedback only on days 8 and 16 of the study, while participants in Groups 3 and 4, who were assigned to receive daily feedback, received feedback.

Type of Feedback

The type of feedback received by participants included either rich feedback or lean feedback. Rich and lean feedback were provided in each of the four time management areas (i.e., study time, personal time, work time, sleep time) depending upon a participant's group assignment.

Rich feedback. Rich feedback was presented in a multimedia format (i.e., audio and video) and included three components. First, a graphic representation of a comparative analysis between participants' time management goals and their actual time management performance (self-reported) was displayed. This comparative analysis included four bar graphs (see Figure 1) addressing study time, personal time, work time, and sleep time. Each graph was comprised of a set of two bars for each day of the study, with one bar representing a specific day's goal and one bar representing that day's actual time spent.

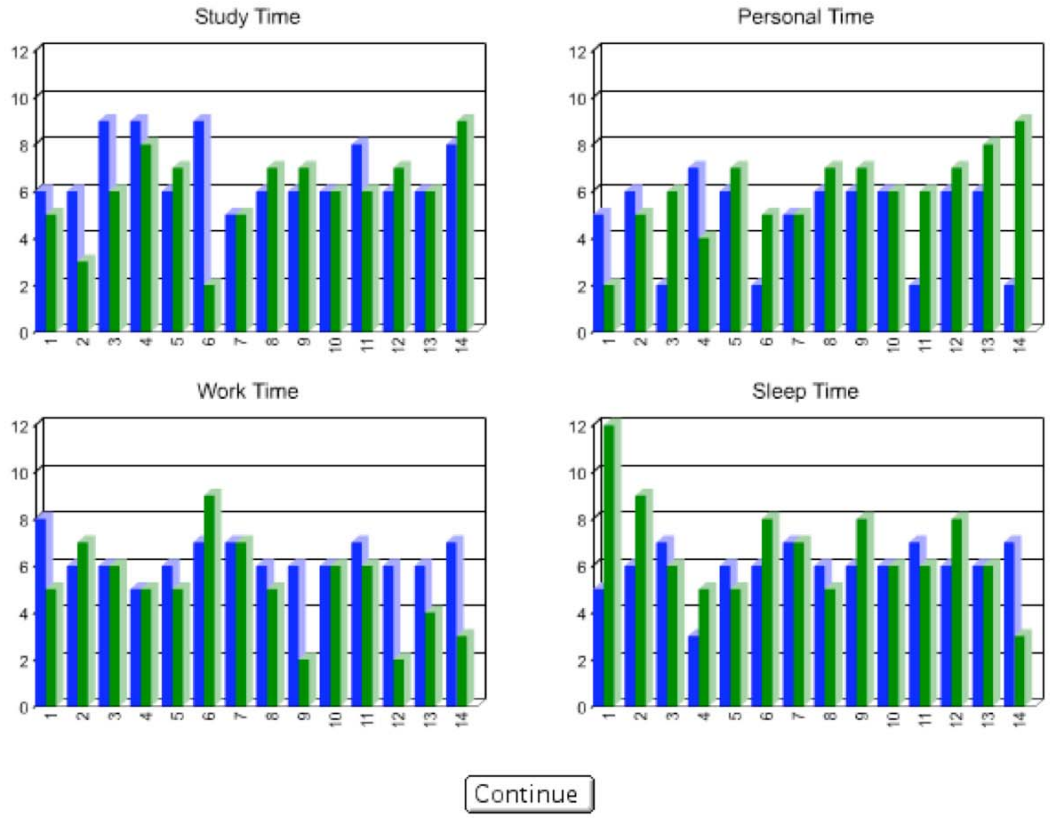

Figure 1. A sample of the bar graphs that were compiled in rich feedback groups (groups two and four). The blue bars indicate the participants' goals set while the green bars indicate the actual time they spent in each area.

Second, a 2-3 minute narrated slideshow addressing the use of a specific self-regulated, time management strategy was provided via a streamed web-based presentation. Each slideshow began with a brief statement related to the results of the comparative analysis, for example, "It looks like you've spent a little more time at work than you had planned," "It looks like you didn't quite spend as much time at work as you had planned," or "Congratulations! You met your time at work goal." Following the statement, a specific self-regulation strategy (e.g., avoiding procrastination, goal setting, learning to say "no") was explained. For example, in the Learning to Say "No" strategy, the following points were emphasized: (a) Saying "no" is a reflection of priorities.; (b) Remember why you are saying "no."; (c) Saying "no" may, initially, result in a little guilt. That is okay.; (d) Be firm. A vague "no" may be pushed into a "yes" by others.; and (e) If stressed or uncertain, gain decision time by stating "I'll need to get back to you on that." Third, following the exposition of the self-regulation strategy, the narrated slideshow ended with a general statement of encouragement, for example, "You met your goal today; keep up the good work" or "While you did not meet your goal today, keep trying. You can do it."

Lean feedback. Lean feedback was presented in a text-based format and included only two short statements, one indicating goal attainment or non-attainment and one providing general encouragement. For example, goal attainment/non-attainment was indicated textually by using the same statements used in the rich feedback: "It looks like you've spent a little more time at work than you had planned," "It looks like you didn't quite spend as much time at work as you had planned," or "Congratulations! You met your time at work goal." Similarly, the general encouragement followed the same text as the rich feedback, "You met your goal today; keep up the good work" or "While you did not meet your goal today, keep trying. You can do it."

Measures

Generally perceived self-efficacy. The generally perceived self-efficacy (GPS) scale, which aims at a "broad and stable sense of personal competence to deal efficiently with a variety of stressful situations" (Schwarzer & Jerusalem, 2000, p. 1), was used to measure participants' general level of self-efficacy. The GPS, in previous research, yielded good internal consistency, as measured by Cronbach's alpha, of between .75 and .90 (Jerusalem & Schwarzer, 1992; Schwarzer, 1994, Schwarzer & Born, 1997; Zhang & Schwarzer, 1995). The GPS is comprised of ten questions, measured on a 4-point scale, in which the responses range from 1 (*not at all true*) to 4 (*exactly true*). Participants were asked to respond to statements such as "I can always manage to solve difficult problems if I try hard enough" and "I am certain that I can accomplish my goals." For the present sample, internal consistency was measured using Cronbach's alpha, resulting in a good internal consistency of .85.

Self-efficacy for self-regulated learning. The self-efficacy for self-regulated learning (SSRL) scale was developed as a subscale of Bandura's self-efficacy scale (Bandura, 2001). Rule and Grisemer's (1996) analysis of the scale yielded a coefficient alpha of .81. The SSRL is comprised of eleven questions that ask participants to record their level of confidence in being able to regulate their academic behaviors including focusing on material, organizing and planning school work, and motivating oneself to complete academic work. Participants were asked to answer how they can perform the various self-regulatory behaviors on a 4-point scale

including 1 (*not well at all*) to 4 (*very well*). For the present sample, the coefficient alpha was .87.

Time management behaviors. The time management behavior (TMB) scale was developed by Trueman and Hartley (1996) as an adaptation of Britton and Tesser's (1991) original 18-item scale. The TMB is a 14-item scale that assesses participants' level of engagement in time management behaviors such as creating "to do" lists, setting and keeping priorities, and making constructive use of time. The TMB is comprised of two subscales, a 5-item Daily Planning subscale and a 9-item Confidence in Long-Term Planning subscale. Trueman and Hartley (1996) determined coefficient alphas of .85 for the Daily Planning subscale, .71 for the Confidence in Long-Term Planning subscale, and .79 overall for the entire scale. Participants responded to all 14-items based on a five-point response set that ranged from 1 (*never engage in the activity*) to 5 (*always engage in the activity*). For the present sample, the coefficient alpha was .73 for the entire scale.

Web-Based Intervention

The web-based time management tool provided the primary interface for the participants to record their time goals and actual time spent on a daily basis. Upon logging-in, a participant would be asked to provide his or her time goals for each of the four time management areas: tomorrow's hourly goal for academic/study time; tomorrow's hourly goal for personal/social time; tomorrow's hourly goal for job/work-related time; and tomorrow's hourly goal for sleep/rest time. All time goals were proposed to the nearest 15 minutes.

Upon entering their time goals, participants would then be asked to enter their actual time spent on the four time management areas for the previous day: yesterday's academic/study time spent; yesterday's personal/social time spent; yesterday's job/work-related time spent; and yesterday's sleep/rest time spent. Again, all times were recorded to the nearest 15 minutes. In addition, all time-related data was stored in a database for use with the feedback mechanism.

After participants entered their time goals and actual time spent, they were either thanked and exited from the program or provided with feedback, depending upon their group membership and the specific day of the study.

Procedure

Each participant was asked to log-in to the web-based time management tool every day for 16 days.

Day 1. Participants were provided with an introductory screen that displayed an overview of the study's structure and the areas for which they would be asked to set goals and monitor their time usage. Following this introduction, participants were asked to establish a login and password. After logging-in to the program on the first day, the participants completed a demographic survey and all three pre-test assessments (i.e., GPS, SSRL, TMB), and they were asked to set their time goals for Day 2.

Day 2. Upon logging in on Day 2, participants set their time goals for all four time management areas for Day 3.

Days 3 – 14. During the next 12 days of the study, participants logged in to the online time management scaffold once a day and (a) entered their time goals for the next day, (b) entered their actual time spent for the previous day, and (c) viewed any feedback as determined by their group membership. Specifically, Groups 3 and 4, the daily feedback groups, were forwarded to feedback screens every day in which they viewed either rich (Group 4) or lean

(Group 3) feedback. In addition, Groups 1 and 2, the weekly feedback groups, received feedback on Days 8 and 16 in which they viewed either rich (Group 2) or lean (Group 1) feedback.

Day 15. On Day 15, when participants logged in, they were only asked to record their actual times for the prior day and then were directed to a feedback screen, if appropriate.

Day 16. On the final day of the study, participants entered their actual time spent from the previous day, viewed appropriate feedback, and completed all three post-test assessments (i.e., GPS, SSRL, TMB).

Results

The effects of schedule of feedback and type of feedback during engagement in a time management intervention scaffold on generally perceived self-efficacy (GPS), self-efficacy for self-regulated learning (SSRL), and time management behavior (TMB) was analyzed using a 2 (daily vs. weekly feedback) X 2 (rich vs. lean feedback) X 2 (pre-test vs. post-test) within-subjects ANOVA for each of the three dependent variables. All analyses were conducted at alpha = .05. Mean scores and standard deviations for each group are provided in Table 1.

Table 1

General Descriptive Statistics Reported by Dependent Variable and Group Size

	General self-efficacy[a]		Self-efficacy for self-regulated learning[b]		Time management behaviors[c]	
	Pre	Post	Pre	Post	Pre	Post
Group 1 (weekly; lean; *n* = 15)						
M	31.00	32.20	33.80	34.13	43.67	44.87
SD	4.95	4.72	3.91	3.44	7.24	6.91
Group 2 (weekly; rich; *n* = 16)						
M	30.81	31.19	32.19	33.63	45.44	47.38
SD	3.97	4.62	5.38	5.34	5.50	5.27
Group 3 (daily; lean; *n* = 18)						
M	33.33	33.06	35.67	36.50	45.72	49.00
SD	3.61	3.68	4.66	4.55	5.78	5.47
Group 4 (daily; rich; *n* = 15)						
M	32.13	32.93	35.80	35.27	48.07	47.13
SD	3.11	3.61	3.25	4.28	4.80	4.50

[a] The range of potential scores is from 10 (min) to 40 (max); Cronbach's alpha: .85
[b] The range of potential scores if from 11 (min) to 55 (max); Cronbach's alpha: .87
[c] The range of potential scores is from 15 (min) to 75 (max); Cronbach's alpha: .73

Generally Perceived Self-Efficacy

The ANOVA for generally perceived self-efficacy did not yield any significant between-subjects main effects for feedback frequency, $F(1, 60) = 2.695$, partial $\eta^2 = .04$, $p = .106$, feedback type, $F(1, 60) = .438$, partial $\eta^2 = .00$, $p = .511$, or the interaction effect. The within-subjects analysis (pretest/posttest) also did not reveal any significant main effects, $F(1, 60) = 2.082$, partial $\eta^2 = .03$, $p = .154$, or interaction effects. Thus, generally perceived self-efficacy was not affected by the schedule of feedback, type of feedback, or the web-based time management tool itself.

Self-Efficacy for Self-Regulated Learning

The ANOVA for self-efficacy for self-regulated learning yielded a significant between-subjects main effect for schedule of feedback, $F(1, 60) = 5.112$, partial $\eta^2 = .07$, $p = .027$, but no main effect for type of feedback, $F(1,60) = 0.58$, partial $\eta^2 = .01$, $p = .44$, or interaction effect. The within-subjects analysis (pretest/posttest) also did not reveal any significant within-subjects main effect, $F(1,60) = 1.90$, partial $\eta^2 = .03$, $p = .17$, or interaction effects. Thus, those participants who received daily feedback, Groups 3 and 4, demonstrated significantly higher self-efficacy for self-regulated learning ($M = 35.81$, $SD = 4. 18$) than participants who received weekly feedback, Groups 1 and 2 ($M = 33.68$, $SD = 4.51$). However, the lack of significance within the interaction demonstrates that the differences in self-efficacy for self-regulated learning scores were not due to the effects of the time management tool, but rather, as indicated in Table 1, due to pre-existing group differences.

Time Management Behaviors

The ANOVA for general time management behaviors did not yield any significant between-subjects main effects for either schedule of feedback, $F(1,60) = 2.79$, partial $\eta^2 = .04$, $p = .10$, or type of feedback, $F(1,60) = 0.86$, partial $\eta^2 = .01$, $p = 35$. The within-subjects analysis (pretest/posttest) yielded a statistically significant main effect for time management behavior, $F(1, 60) = 4.34$, partial $\eta^2 = .06$, $p = .041$. There were not, however, any significant interactions with schedule of feedback or type of feedback. Thus, participants' self-reported engagement in time management behavior increased significantly from before ($M = 45.72$, $SD = 5.68$) their involvement with the web-based time management tool to after ($M = 47.09$, $SD = 5.57$).

Discussion

The overall goal of the study was to add to the literature on self-efficacy and self-regulated learning by designing a time management intervention utilizing web-based technologies to influence participants' levels of self-efficacy and self-regulated learning. The intervention was developed to facilitate the development of higher levels of self-efficacy by engaging participants in a self-regulatory process focused on (a) goal setting as a forethought/strategic planning process; (b) time management as a performance/volitional control process, and (c) feedback as a mechanism by which to encourage self-reflection and self-evaluation. *Type of feedback* and *timing of feedback* were manipulated to provide participants with varying types and levels of feedback. Results of the data analyses indicated that while students reported an increase in time management behaviors, there was no subsequent effect on

the students' self-efficacy and self-regulated learning, and there were no effects based on type or timing of feedback.

Design Considerations

Within their discussion on the specific components and designs of interventions, Hofer, Yu and Pintrich (1998) asked what the target of an intervention would be in terms of the potential cognitive, metacognitive, or motivational components that would comprise the intervention. The current study utilized the research on feedback as its basis and attempted to manipulate types of feedback and frequency of feedback to incorporate motivational and affective components to the design of the intervention. Although the intervention was designed to incorporate motivational elements by utilizing goal discrepancy feedback and encouragement, both have been cited to influence levels of motivation and affective states (see Schunk 1984 & 1985; Bandura, 1997), and both utilized media attributes to attempt to further enhance motivation and increased affect (see Khine, 1996); the research did not reveal a level of significance that corroborated the use of the specific design components.

While the current study did not demonstrate significant findings related to the development of self-regulation and self-efficacy, it is not yet time to abandon Schunk and Ertmer's (2000) call for the development of interventions that address the dual purposes of enhancing students' self-efficacy and the facilitation of self-regulatory strategies There are many design considerations related to leveraging different media attributes to enhance the vicarious learning/social modeling experience when receiving feedback that could be addressed by developing a web-based product with similar features. There are many options that can be utilized to create a highly interactive, media-rich environment in which students can be engaged in learning self-regulatory processes. For instance, discussions on instructional design for attitudinal objectives frequently turn to Bandura's concept of social modeling (Bandura, 1977) and cite the use of video as being the media of choice when attempting to utilize such instructional strategies (see Smith & Ragan, 1993). Investigating the use of video to use as a tool to enhance the rich feedback conditions could possibly yield more significant results as it would, therefore, incorporate a more affective component into the enactive mastery experience.

Additional considerations could include whether the intervention was integrated into a course design, such as a freshman year experience course, or whether it was an "adjunct" or standalone experience, a question posed by Hofer, Yu, and Pintrich (1998). Regardless of whether the intervention is adjunct or integrated into the course design, the use of the web-based products, in this instance, provided participants with an option to engage in self-regulatory processes and monitor behaviors regardless of the instructional setting. However, future design considerations could include an option to integrate the intervention within a course, which may provide a more meaningful context for the intervention.

Choosing to develop an intervention that actively utilized goal-setting, management, and feedback processes contained within a web-based format provided participants the capability to utilize and interact with the system during their own time and at their own pace. Developing a web-based system provides the capability for others to utilize the system as an instructional tool regardless of whether students are enrolled in distance, traditional, or blended learning experiences. This capability responds to the call by Schunk and Ertmen (2002) to develop more interventions and augments the work done by Kitsantas and Dabbagh (2004, 2005) and Cennamo, Ross, and Rogers (2002) by providing another option for engaging students in self-regulated learning activities regardless of whether they are distance or traditional students.

References

Bandura, A. (1977). *Social learning theory*. Upper Saddle River: Prentice Hall.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs: Prentice Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.

Bandura, A. (1995). Exercise of personal and collective efficacy in changing societies. In A. Bandura (Ed.), *Self-efficacy in changing societies*. Cambridge: Cambridge University Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman & Company.

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology, 45*(5), 1017-1028.

Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes, 38*, 92-113.

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology, 41*(3), 586-598.

Bangert-Drowns, R. L., Kulik, C. C., Kulik, J. A., & Morgan, M. T. (1991). The instructional effect of feedback in test-like events. *Review of Educational Research, 61*(2), 218-238.

Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology, 83*(3), 405-410.

Cennamo, K. S., Ross, J. D., & Rogers, C. S. (2002). Evolution of a web-enhanced course: Incorporating strategies for self-regulation. *Educause Quarterly, Nov*(1), 28-33.

Dempsey, J. V., Driscoll, M. P., & Swindell, L. K. (1993). Text-based feedback. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp. 21-54). Englewood Cliffs, NJ: Educational Technology.

Gorrell, J., & Capron, E. W. (1988, Spring). Effects of instructional type and feedback on prospective teachers' self-efficacy beliefs. *The Journal of Experimental Education, 56*, 120-123.

Hofer, B. K., Yu, S. L., & Pintrich, P. R. (1998). Teaching college students to be self-regulated learners. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulated learning: From teaching to self-reflective practice* (pp. 57-83). New York: The Guilford Press.

Khine, M. S. (1996). The interaction of cognitive styles with varying levels of feedback in multimedia presentation. *International Journal of Instructional Media, 23*(3), 229 - 237.

Kitsantas, A., & Dabbagh, N. (2004). Supporting self-regulation in distributed learning environments with web-based pedagogical tools: An exploratory study. *Journal on Excellence in College Teaching, 15*(1/2), 119-142.

Kulhavy, R. W., & Stock, W. A. (1989). Feedback in written instruction: The place of response certitude. *Educational Psychology Review, 1*(4), 279-308.

Rule, D. L., & Grisemer, B. A. (1996). *Relationships between Harter's scale of intrinsic versus extrinsic orientation and Bandura's scale of self-efficacy for self-regulated learning* (Eric

Document No. ED 409 355). Cambridge, MD: Paper presented at the Annual Meeting of the Eastern Educational Research Association.

Schunk, D. H. (1981). Modeling and attributional feedback effects on children's achievement: A self-efficacy analysis. *Journal of Educational Psychology, 74*, 93-105.

Schunk, D. H. (1983a). Ability versus effort attributional feedback: Differential effects on self-efficacy and achievement. *Journal of Educational Psychology, 75*(6), 848 - 856.

Schunk, D. H. (1983b). Goal difficulty and attainment information: Effects on children's achievement behaviors. *Human Learning, 2*, 107-117.

Schunk, D. H. (1984). Enhancing self-efficacy and achievement through rewards and goals: Motivational and informational effects. *Journal of Educational Research, 78*, 29-34.

Schunk, D. H. (1985). Participation in goal setting: Effects on self-efficacy and skills of learning disabled children. *Journal of Special Education, 19*, 307-317.

Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag.

Schunk, D. H., & Ertmer, P. A. (2000). Self-regulation and academic learning: Self-efficacy enhancing interventions. In M. Boekaerts, P. R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation*. San Diego, CA: Academic Press.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. Eccles (Eds.), *Development of achievement motivation*. San Diego: Academic Press.

Schunk, D. H., & Swartz, C. W. (1993). Goals and progress feedback: Effects on self-efficacy and writing achievement. *Contemporary Educational Psychology, 18*, 337 - 354.

Smith, M. D., & Steffen, J. P. (1994). The effect of different schedules of feedback on the management time of student teachers. *The Physical Educator, 51*, 81 - 92.

Smith, P. L., & Ragan, T. J. (1993). Designing instructional feedback for different learning outcomes. In J. V. Dempsey & G. C. Scales (Eds.), *Interactive instruction and feedback*. Englewood Cliffs, N.J.: Educational Technology.

Trueman, M., & Hartley, J. (1996). A comparison between the time-management skills and academic performance of mature and traditional-entry university students. *Higher Education, 32*, 199-215.

Whipp, J. L. & Chiarelli, S. (2004). Self-regulation in a web-based course: A case study. *Educational Technology Research and Development, 52*(4), 5-22.

Winne, P. H. (1995). Inherent details in self-regulated learning. *Educational Psychologist, 30*(4), 173-187.

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist, 25*, 3-17.

Zimmerman, B. J. (1995a). Self-efficacy and educational development. In A. Bandura (Ed.), *Self-dfficacy and changing societies* (pp. 202-231). Cambridge: Cambridge University Press.

Zimmerman, B. J. (1995b). Self-Regulation Involves More Than Metacognition: A Social Cognitive Perspective. *Educational Psychologist, 30*(4), 217-221.

Zimmerman, B. J. (1998). Developing self-fulfilling cycles of academic regulation: An analysis of exemplary instructional models. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulated learning: From teaching to self-reflective practice* (pp. 1-20). New York: The Guilford Press.

Zimmerman, B. J. (2001). Theories of self-regulated learning and academic achievement: An overview and analysis. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement* (2nd ed.). Mahwah, N.J.: Lawrence Erlbaum Associates.

Zimmerman, B. J., Bonner, S., & Kovach, R. (1996). *Developing self-regulated learners*. Washington, DC: American Psychological Association.

Zimmerman, B. J., & Schunk, D. H. (1989). *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag.