Applying Self-Regulated Learning Strategies
in a Blended Learning Instruction

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Abstract: The purpose of this study was to examine the effect of the blended learning environment on learners’ self-efficacy for learning and performance and self-regulated learning strategies. In this study, during the semester students used different self-regulated strategies such as self-evaluating, appreciating their classmates’ efforts on their work, monitoring their work by comparing it with that of other students in the class and monitoring their study exams through follow-up quizzes; monitoring their study time, keeping journals in a blended learning environment to help themselves to improve their use of self-regulated strategies. Research results revealed that students’ self-efficacy and self-regulated strategies perception benefited from the blended learning environment with self-regulated learning strategies. Students learning within a blended learning environment with self-regulated learning strategies improved their perception of self-efficacy for learning and performance and meta-cognitive self-regulation, time and study environment management and help seeking.

Key words: Blended learning environment • self-regulated learning strategies • self-efficacy

INTRODUCTION

As universities promote computer and internet use, distance education is now commonplace in most institutions of higher learning, and the number of courses offered at a distance through the internet is on the rise [1]. Internet-based computerized learning known as e-learning, has attracted the attention of educators. E-learning is defined as “the use of new multimedia technologies and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaboration” [2]. Millions of students enrolled now or who will enroll in e-learning programs may find the courses to be attractive for many reasons. E-learning programs are one of the methods preferred in adult education and especially in post-graduate programs because of the fact that they provide learners who cannot follow an educational program at specific times with education facilities free from time and place constrictions, they make it possible for learners to learn at their own speed, revise learning material as many times as they need, and they provide audio and visual material [3]. However, once enrolled, the students may experience a sense of isolation with regard to the courses. As a matter of fact, some research has revealed that e-learning is an approach that is not mainly preferred by learners especially in graduate programs simply because it, being free from space and group learning, has the weakness of keeping the learner away from the process of socialization, and that there is not a significant difference, in terms of various variables, between learners who learn with peers and those learn through internet-based learning environments [4, 3]. Therefore, it should be mentioned that, e-learning programs can no longer be thought of exclusively in terms of static web-based instructional systems and for some time such programs have allowed the facility for on-line interaction between learners. It has been suggested that such interactions between learners in online programs are vital to their success. Further studies also provide evidence to support the benefits of on-line collaborative environments [5]. This discussion has resulted in the emergence of Blended Learning environments which offer interactive learning facilities together with peer learning.

Blended Learning: In the learning process, efforts to combine advantages of internet-based computer assisted learning environment with those of peer learning - especially by focusing on those features of both approaches that enhance learning environment quality - have initially resulted in the concept of “hybrid” learning.
[6, 7], to be followed by the concept of "blended" learning. In blended learning applications, strong aspects of on-line learning are merged with those of face-to-face learning, as a result of which a new learning environment is formed. In this way, weak aspects of either learning environment are eliminated. In blended learning environments (BLE), weak and strong aspects of an on-line learning environment cover those of a face-to-face environment [7, 6]. It should be mentioned that, in many instances, even in BLE to be successful in these online courses, learners will need to rely on their individual abilities of directing their learning and navigating through assignments and deadlines. That is, the learners will need to use self-regulated learning strategies [1].

Accordingly, the purpose of this study was to examine learners’ reported use of self-regulated learning strategies and motivation in blended learning instruction. Many studies imply that self-regulated skills can support learning from any instructional method [8-10].

Self-Regulation: Self-regulation refers to the ways in which learners take control of their own learning. Theories and models of self-regulated academic learning emerged in the 1980s in an effort to describe what successful learners do [11, 12]. Zimmerman [13, 10] defines self-regulation as “meta-cognitively, motivationally, and behaviorally active participants in their own learning process”. According to Zimmermen [13], in a given situation, self-regulated learners are aware of the information and skills they must possess, and they take the steps necessary to acquire these items. Pintrich [14] has also indicated that self regulation is an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior, guided and constrained by their goals and the contextual features in the environment. In general, self-regulated learners identify a goal to accomplish and control their behavior, motivation, affect and cognition in order to attain that goal [15]. Self-regulated learning (SRL) strategies are strongly related with motivation. It is indicated that effective self-regulation requires learner motivation to learn [11, 10]. Zimmerman [13] specifies self-efficacy as the most important factor related to one’s personal components of self-regulation. Thus self-efficacy beliefs influence students’ behavior by influencing the decisions of which tasks in which to engage, what level of effort they will expend and how long they will persevere in the face of difficulty [1].

Blended Learning Environment and Self-Regulation: Many studies imply that traditional learning environments do not prepare students for the high degree of SRL [16, 17]. SRL strategies are strongly associated with motivational factors. One of the advantages of computer-based instruction over traditional instruction is its potential to allow students to study the program at their own rates. For students technology based environment is a suitable learning environment to take charge of their own learning since they can control their own learning process. Applying technology to improve learners’ motivation has been mentioned by a number of researchers [18, 19]. Chang and Lehman [20] evaluated the relevance on learners’ motivation in a multi-media based language learning instruction. The outcomes demonstrated that the group with higher level of motivation had the highest score on motivation perception. As the internet gained popularity and acceptance, the focus on self-regulation research shifted from the context of computer based instruction to web-based instruction [1]. Generally, researches have mentioned self-efficacy and self-regulation components to be important elements of success for web-based learners [9, 1, 21]. In one recent study Shih and Gamon [19] point out the relationship of student motivation, learning style, attitude, and achievement in a web-based course. They found a significant relation between motivation and achievement. Chang [8] has found that students’ motivation perception benefited from the web-based instruction with SRL strategies. Students learning with a web-based environment with self-regulated strategies became more responsible for their own learning, more intrinsically oriented and more challengeable. Although there are number of different models of SRL [22, 23], they share the same supposition that students can actively regulate their cognition, motivation, or behavior and, through these various regulatory processes, achieve their goals and perform better [13]. However, it is known that the development of self-regulation strategies do not develop as the age level rises. Efforts to apply instructional strategies to develop self-regulation learning behavior are recommended and there is evidence that formal attempts to teach students to be self-regulating learners are somewhat successful [24, 8, 9, 25, 21].

In this study, we present results from a study of a BLE which was implemented at Yildiz Tech University. The study aimed to evaluate students’ use of SRL strategies in BLE. The subject of the evaluation was a course named “Instructional Technology and Material
Development” which was offered during the 2006-2007-fall semester and which used different instructional strategies. For the last four years some departments at Yildiz Tech University have been developing BLE for their students. BLE not only makes it possible to create very sophisticated technology enhanced learning environment but it also seems to have a potential for supporting students’ use of SRL strategies (SRL). In order to be able to evaluate this potential Pintrich et al. [26]. The Motivated Strategies for Learning Questionnaire (MSLQ) was used. The Pintrich’s MSLQ was developed by using a social cognitive view of motivation and learning strategies, with the students represented as an active processor of the information whose beliefs and cognitions mediated important instructional input and task characteristics.

RESEARCH QUESTIONS

The present study was designed to explore students’ perception of motivation and responses to BLE through the aid of SRL strategies. The research questions were:

- Do students in a BLE and applying self-regulated learning strategies improve their self efficacy for learning and performance?
- Do students in a BLE and applying self-regulated learning strategies improve their use of meta-cognitive self-regulation learning strategies that help students control and regulate their own cognition?
- Do students in a BLE and applying self-regulated learning strategies improve their resource management strategies (time and study environment management/help seeking)?

MATERIALS AND METHODS

Because this study was intended to develop a picture of students’ SRL processes in a BLE, we chose a descriptive method. This study included SRL strategies that were designed to assist students to self-observe, self-evaluate their effectiveness, to self-monitor changes and adjust their self-regulated strategies in to BLE. The “Instructional Technology and Material Development” course, targeted at third-year college students who are trained to be teachers, was designed as a semester-long, 2 credit-hour class, and 14-week graduate course. The whole course is considered to be a BLE, including face to face teaching, web-based learning environment. The course introduced students to a variety of technological tools and materials that can support standard-based instructional design. The entire class, consisting of 82 students divided into two groups (40-42) met every week to discuss related web module and give presentations. During the course time of the study 74 students were active in both face-to-face and web-based program. When the study was conducted, all web-based courses were using Lotus Learning Space as a platform for delivery.

Subjects: Participants in this study were 74 university students. The gender breakdown was 28 males and 46 females. None of the participants had any previous experience in taking a blended learning course.

The Course: The “Instructional Technology and Material Development” is a core course of the undergraduate curriculum at the Faculty of Education of Yildiz Tech University. This course has no prerequisites. In essence, the instructor of the course mentioned that there were two major learning objectives in the course, the first being to understand the instructional principles of material development and the second to be able to apply the principles while developing a teaching material. As Cottrel and Robison [27] mentioned, most course objectives provide students with the tools they need so that they can apply the tools to solve real problems. The development of the web-based material of the course was a collaborative effort involving the instructor of the course, instructional designers, curriculum developers, and graphic designers from different departments of the university. This design process was supported by Yildiz Tech University. To create the online environment, the web-based material included: the course content, the course text, discussion forms, the library and follow up quizzes. The course content and the course text were developed by the course instructor. The curriculum developer helped the instructor while designing the content into modules. As visual materials, there were animations, graphs and pictures which were planned by the course instructor and developed by graphic designers. During the design of the web-based material, Mayer et al. [28] principles of web-based material development and the opinions of the instructional designers were taken into consideration. The website consisted of four sections: Course Information, Course Content/Follow up Quizzes, Course Discussion and Student System. Course Information provided course description, syllabus, and objectives of the course. Course Content included 9 modules on the effective material development principles. The article reading assignments and evaluating material assignments were in related modules on the web site. For each module (topic),
students interacted with the tutor and friends when needed. Throughout the semester 3 individual and 1 group project on material development was conducted. Study time recording and reflective summary form were used during the semester. The study time was recorded by the Lotus Learning Space Learning Management System; the students were guided to check their study time each time when they entered the course web-site. In addition, students were asked to write a reflective summary for the articles they read on the web site and asked to do the follow up quizzes at the end of each module. In the learning journal, students were requested to write down their reflections, suggestions and complaints concerning the web material and the learning environment. In addition, students were asked to study the related module before coming to face-to-face class discussions. Students were advised to make a plan for their study time to be successful in this course. The face-to-face class hours consist of two hours lecture and discussion each week. Lectures are used to present difficult concepts, give examples from materials, answer the question, and in the discussion hours students present their own work and evaluate each others’ work. This obliges students to do some preparation work before attending the face-to-face hours.

Instrument
Self-regulated Learning Strategy: The Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. [26] was used. The MSLQ is a self-report, Likert Type (1=not true of me, to 7=very true of me) instrument designed to measure university students’ motivational orientations and their use of different learning strategies. The motivation section of MSLQ consists of six sub-scales with items designed to assess students’ goals, task value, control of learning beliefs, and self-efficacy for learning and performance and test anxiety. The learning strategy section consists of nine subscales with items to assess students’ use of different cognitive and meta-cognitive strategies, management of various resources. In this study, sub-scales with items designed to assess students’ self-efficacy beliefs for learning and performance and sub-scales with items regarding students use of meta-cognitive self-regulation, time and study environment management and help seeking were used. Cronbach coefficient alpha reliabilities were 0.93 for self-efficacy for learning and performance, 0.79 for meta-cognitive self-regulation, 0.76 for time and study environment management, 0.52 for help seeking [26].

Achievement: Students’ final exam for the course was taken as the achievement scores of the study. The final exam consists of a 31 item multiple-choice test. The test was designed to measure the students’ knowledge about effective material development principles and to comment on samples of materials. In this study the reliability coefficient alpha for the post test was 0.72.

Procedures: At the beginning of the semester, the MSLQ was given to students. In total there were 35 items. On a demographic form, participants also provided general demographic information. They were also asked to write their expectations from this course. For the on-line section of the course each student was assigned a password to get into the course website. In addition the tutor explained students how to use the website. At the mid semester, students started to design their own materials and present them in the class. When meeting in class two different activities took place during the presentation. As a whole class activity the students evaluated each other’s material according to the material development principles and as a group activity students worked in groups to give a report related to material evaluation. At the end of the semester they created a final material. During the class meeting students were asked to check their own study records to their self-learning process in on-line material. From the chart given in Lotus Learning Space LMS, students could easily find out whether their study time increased or decreased, see the time they spent on studying each module. In addition they were advised to check their success in follow up quizzes which took place at the end of each module. Meanwhile, from a form, students were asked to mark the strategy they used when studying the course content for each module. At the end of the semester, the MSLQ was administered again.

Data Analysis: T-test was conducted to answer the research questions about students’ achievement, self efficacy beliefs for learning and performance, meta-cognitive self-regulation, time and study environment management and students’ help seeking. The MSQL subscale scores for each student were constructed by taking the mean of items that make up that scale. Self-efficacy for learning and performance has 8 items, meta-cognitive self-regulation has 11 items, time and study environment management has 8 items and help seeking has 4 items. For negatively worded items, the ratings were reversed. Scores of 4, 5, 6, 7 indicates a positive response to the items. Cronbach coefficient alpha reliabilities were .88 for self-efficacy for learning and performance, 0.81 for meta-
cognitive self-regulation, 0.63 for time and study environment management, 0.69 for help seeking sub-scale in the present study.

RESULTS

The overall distribution of the four sub-scale mean scores and achievement mean scores for pre-test and post-test is provided in Table 1.

In this study we looked at an undergraduate course in a BLE that was designed to develop students’ use of self-regulated strategies. During the semester students used different self-regulation strategies such as self-evaluating, appreciating their classmates’ criticisms on their work; monitoring their work by comparing their work to that of other students in the class and monitoring their study exams through follow-up quizzes; monitoring their study time, and keeping journals. Results in Table 1 indicate that after the one semester course, students successfully achieved the objectives of the course as well as developing their use of self-regulatory strategies. Table 1 presents the means and standard deviation for pre-and post-test scores. As shown in Table 1 post-test scores are higher than pre-test scores and there is a statistically significant difference between pre-and post-test scores.

Using Pintrich et al. [26] and Pintrich [14] constructivist and social cognitive framework [23] we summarized the students’ perception of self-efficacy for learning and performance subscale, which is under the motivation section and meta-cognitive self-regulation, time and study environment management and help seeking subscales, which are under the learning strategies section.

Self-efficacy for learning and performance: Pintrich et al. [26] measurement of self-efficacy is a little broader than other measures in that both expectancy for success (which is specific to task performance) and judgments of one’s ability to accomplish a task and a confidence in one’s skills to perform a task are collapsed within the general term of self-efficacy [19]. The 8 items of this scale assessed these two aspects: expectancy for success and self-efficacy.

Self-efficacy refers to individuals’ beliefs about their capabilities to learn or perform action at designed levels [30]. Results in Table 2 show that after finishing the course, students’ self-efficacy beliefs for learning and performance, in general, is much higher when compared with pre-test scores. This means that using some self-regulation strategies during the course designed in blended learning model, affected students’ self efficacy

<table>
<thead>
<tr>
<th>Mean (std)</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>df</th>
<th>t</th>
<th>p</th>
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<tbody>
<tr>
<td><strong>Achievement</strong></td>
<td>29.25 (8.44)</td>
<td>68.85 (11.38)</td>
<td>73</td>
<td>27.05</td>
<td>0.00*</td>
</tr>
<tr>
<td><strong>Sub-scales</strong></td>
<td></td>
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</tr>
<tr>
<td>Self-efficacy for learning and performance</td>
<td>3.47 (0.39)</td>
<td>5.18 (0.89)</td>
<td>73</td>
<td>22.13</td>
<td>0.00*</td>
</tr>
<tr>
<td>Metacognitive self-regulation</td>
<td>3.57 (0.35)</td>
<td>5.00 (0.81)</td>
<td>73</td>
<td>19.24</td>
<td>0.00*</td>
</tr>
<tr>
<td>Time and study environment management</td>
<td>3.83 (0.64)</td>
<td>5.07 (0.86)</td>
<td>73</td>
<td>19.32</td>
<td>0.00*</td>
</tr>
<tr>
<td>Help seeking</td>
<td>3.55 (0.49)</td>
<td>5.13 (0.89)</td>
<td>73</td>
<td>12.80</td>
<td>0.00*</td>
</tr>
<tr>
<td>p&lt;0.01 (N=74)</td>
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</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (std)</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I believe I will receive an excellent grade in this class.</td>
<td>2.99 (0.78)</td>
<td>4.57 (1.02)</td>
<td>15.52</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>2. I'm certain I can understand the most difficult material presented in the reading for this course.</td>
<td>3.57 (0.84)</td>
<td>5.03 (1.30)</td>
<td>13.16</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>3. I'm confident I can learn the basic concepts taught in this course.</td>
<td>4.00 (0.70)</td>
<td>5.92 (1.02)</td>
<td>13.99</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>4. I'm confident I can understand the most complex material presented by the instructor in this course.</td>
<td>3.85 (0.77)</td>
<td>5.23 (1.12)</td>
<td>11.36</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>5. I'm confident I can do an excellent job on the assignments and test in this course.</td>
<td>3.26 (0.82)</td>
<td>4.80 (0.97)</td>
<td>12.78</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>7. I'm certain I can master the skills being taught in his class.</td>
<td>2.95 (0.93)</td>
<td>5.24 (1.16)</td>
<td>13.00</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>8. Considering the difficulty of this course, the teacher and my skills, I think I will do well in this class.</td>
<td>3.64 (0.76)</td>
<td>5.22 (0.96)</td>
<td>16.93</td>
<td>0.00*</td>
<td></td>
</tr>
<tr>
<td>6. I expect to do the well in this class.</td>
<td>3.59 (1.00)</td>
<td>5.24 (1.14)</td>
<td>12.24</td>
<td>0.00*</td>
<td></td>
</tr>
</tbody>
</table>
Table 3: T-test of "Meta-cognitive Self-regulation" items between pre-test and post-test (N=74)

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. During class time I often miss important points because I’m thinking of other things. (reversed)</td>
<td>4.68 (1.06)</td>
<td>5.53 (1.23)</td>
<td>8.57</td>
<td>0.00*</td>
</tr>
<tr>
<td>2. When reading for this course, I make up questions to help focus my reading.</td>
<td>3.35 (0.83)</td>
<td>4.42 (1.59)</td>
<td>7.53</td>
<td>0.00*</td>
</tr>
<tr>
<td>3. When I become confused about something I’m reading for this class, I go back and try to figure it out.</td>
<td>4.47 (1.08)</td>
<td>6.16 (1.84)</td>
<td>12.42</td>
<td>0.00*</td>
</tr>
<tr>
<td>4. If course readings are difficult to understand, I change the way I read the material.</td>
<td>3.14 (0.92)</td>
<td>5.05 (1.31)</td>
<td>11.23</td>
<td>0.00*</td>
</tr>
<tr>
<td>5. Before I study new course material thoroughly, I often skim it to see how it is organized.</td>
<td>2.82 (0.90)</td>
<td>4.81 (1.51)</td>
<td>14.98</td>
<td>0.00*</td>
</tr>
<tr>
<td>6. I ask myself questions to make sure I understand the material I have been studying in this class.</td>
<td>2.91 (0.74)</td>
<td>4.81 (1.39)</td>
<td>14.27</td>
<td>0.00*</td>
</tr>
<tr>
<td>7. I try to change the way I study in order to fit the course requirements and the instructor’s teaching style.</td>
<td>2.18 (0.93)</td>
<td>4.36 (1.54)</td>
<td>14.37</td>
<td>0.00*</td>
</tr>
<tr>
<td>8. 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.</td>
<td>3.50 (0.88)</td>
<td>5.34 (1.23)</td>
<td>13.37</td>
<td>0.00*</td>
</tr>
<tr>
<td>9. When studying for this course I try to determine which concepts I don’t understand well.</td>
<td>3.30 (0.79)</td>
<td>5.28 (1.10)</td>
<td>14.82</td>
<td>0.00*</td>
</tr>
<tr>
<td>10. When I study for this course, I set goals for myself in order to direct my activities in each study period.</td>
<td>3.80 (1.18)</td>
<td>4.15 (1.23)</td>
<td>1.89</td>
<td>0.06</td>
</tr>
<tr>
<td>11. If I get confused taking notes in class, I make sure I sort it out afterwards.</td>
<td>5.16 (1.00)</td>
<td>4.97 (1.56)</td>
<td>1.10</td>
<td>0.27</td>
</tr>
</tbody>
</table>

* p<0.01

beliefs positively. When we examined the items it was clearly seen that students were more confident that they could master the skills being taught (x=5.24; p<0.01), that they would receive an excellent grade (x=4.57; p<0.01), that they could learn the basic concepts taught in this course (x =5.92; p<0.01) and etc. Results of this study indicate that incorporating self-regulatory strategies in to BLE do helps students improve their self-efficacy beliefs consequently motivation beliefs.

**Meta-cognitive self-regulation:** Meta-cognitive self-regulation sub-scale is under the learning strategies section of the MSLQ. In this category, meta-cognitive control strategies, measured by one large sub-scale related to the use of strategies that help students control and regulate their own cognition. This sub-scale includes planning (setting goals), monitoring (of one’s comprehension) and regulating (e.g. adjusting reading speed depending on the task) [29]. The 11 items of this scale assessed the students’ use of strategies in a BLE.

In this study students were guided to use self-regulation strategies: self-evaluating, appreciating their classmates’ criticisms on their work; monitoring their work by comparing their work to that of other students in the class and monitoring their study exams through follow-up quizzes; monitoring their study time, and keeping journals. Table 3 shows that students’ use of these self-regulation strategies improved at the end of the course. The difference between pre-test and post-test is statistically significant (p<0.01) for 9 items except for the last two items. The mean for item 10, which is about setting a goal, improved from x=3.80 to x=4.15 at the end of the course; nevertheless, the difference is statistically not significant.

Although there is a decrease in the mean for item 11, the post-test mean is still in the high category. The most salient item in Table 3 is item 7. In this item students mention that they try to change the way they study in order to fit the course requirements and the instructor’s teaching style. Although the pretest for this item was very low at the end of the course designed in BLE students mentioned that they improved their strategy in order to fit the course requirements and the instructor’s teaching style. As mentioned before, this was the first experience for the students to follow a course in BLE. Results of this study indicate that incorporating self-regulatory strategies in to BLE does help students improve their use of self-regulation strategies.

**Time and Study Environment Management:** As mentioned before the learning strategies section of the MSLQ consists of three general types of scales: cognitive, meta-cognitive and resource management. The resource management category includes four subscales on students’ regulatory strategies for controlling resources other than their cognition. These strategies include managing one’s time and study environment (e.g. using one’s time well, having an appropriate place to study etc.) as well as regulation of one’s effort (e.g. persisting in the face of difficult or boring tasks) [29]. There were 8 items in this scale. Table 4 shows that students improved their strategies to manage their study time and study environment at the end of the course.

This course was designed as the integration of face-to-face and web-based learning environments. As specified, the course was a 4-hour course in the BLE,
students spent two hours within the FTF environment every week; they were also advised to spend at least two hours in the online learning environment. For this application, for the students who do not have access to internet, the computer lab of the department was scheduled for use every Tuesday. Moreover, the students had a chance to use the university’s computer lab, which is open from 8 am to 7 pm. every day. Creating special areas or making arrangements for access to resources are the environmental components of self-regulation [1]. The results in Table 4 show that all these managements for the course helped students to improve their strategies to manage their study time and study environment.

**Help Seeking:** Help seeking refers to students’ seeking help from peers or instructors when needed. This sub-scale focuses on the use of others in learning. In this study, help seeking refers to students’ relation both in face-to-face learning and on-line learning environments. There were 4 items in this sub-scale. Table 5 presents the means, standard deviations and level of significance of the items. The difference between pre-test and post-test is statistically significant (p<0.01).

Through the online learning environment in our BL model, students had student-content interaction with self-paced, web-based materials; student-student interaction during discussion forums; and student-instructor interaction via e-mail. In the FTF environment, there were student-instructor and student-student interactions. The instructor posed questions about the online materials students had already studied, answered students’ questions, started student-student discussions on the points that were not clearly understood, and encouraged students to present the instructional materials they had developed. In this learning environment all students require assistance at times, to understand material and, when confused about something seeking help from the instructor or peers seems like a natural respond of BLE. Yet wide individual differences occurred in students’ frequency and type of help seeking which is not explained in this paper.

**CONCLUSIONS**

The purpose of the current study was to examine the integration of self-regulatory strategies, self-evaluating, appreciating students’ own classmates critics on their work; monitoring their work by comparing it to that of other students in the class and monitoring their study exams through follow-up quizzes; monitoring their study
time, keeping journals in a blended learning course. These activities were intended to assist the students to set goals, regulate their learning, monitor their effectiveness in the course, to use different learning strategies that help students control and regulate their own cognition, and adjust the strategic methods during blended learning instruction. Findings of the study show that after finishing the one-semester course students’ experienced success in BLE both from the point of academic achievement and from the point of improving the use of self-regulated strategies. Students in this study became more confident, more responsible for their own learning. They experienced that their efforts to study made a difference in their learning.

Additionally, the findings of this study could provide valuable insights for instructors who want to create BLE to improve students’ self-regulation strategies. Using a BLE appears to be an effective strategy when trying to implement self-regulation strategies. In conclusion, we believe this study lends support to the notion that learners are able to improve their self-regulatory strategy use when conducted in such learning environments like blended learning.

REFERENCES