Searching for New Meanings of Self-regulated Learning in e-Learning Environments

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Abstract: This study examined the relations of self-regulation, self-efficacy and e-learning strategies in the e-learning environment. The participants were randomly selected 77 adult learners who were enrolled in one of the Korea's Digital Distance Universities. The result showed that ‘time management’ was the most significant predictor on academic achievement; only e-learning strategies significantly predicted academic achievement. In addition, the result indicated that the traditional framework of self-regulation and self-efficacy should not comprehensively deal with e-learning strategies. In summary, the current research results implies that there would be limitations in supporting self-regulation in e-learning environment if we rely on solely the models and schemes based on F2F environment such as Zimmerman & Martinez-Pons’ and Pintrich & DeGroot’s.

Introduction

As the information society has matured, there are increasing demands for distributed learning, lifelong learning, and learner-regulated learning. Cyberspace, due to the characteristics of it openness, flexibility, decentralization, is expected to be a new learning environment responding those demands. Moreover, there is the increase of needs for self-regulation (Knowles, 1998). Within the increased flexibility of the new technology, the learning results may vary depending on individual learners’ intellectual competencies and learning preferences (Owston, 1997; Windschitl, 1998). Self-regulated learning has significant impacts on learning processes and learning achievement. Its impacts are prospected to be stronger in e-learning environment (Hartley & Bendixen, 2001). But, most research on e-Learning simply applies and presupposes the same learning strategies identified and discussed in the traditional face-to-face learning environment. There is increased need for reconsideration of self-regulated learning roles within e-learning context in a systemic and multidimensional way.

Study Goals

The current study attempted to examine self-regulated learning strategies (Zimmerman & Martinez-Pons), self-efficacy (Pintrich & DeGroot), and e-learning strategies (Lee) within the e-learning environment. The purposes of the present study were as follows:
1. How are the self-regulated learning strategies, self-efficacy, and e-learning strategies related to student academic achievement within the e-learning environment?
2. What are the relations among self-regulated learning strategies, self-efficacy, and e-learning strategies?

Theoretical Background
Meaningful learning has been regarded to be the foremost goal of education. As characteristics of meaningful learning, the concept of ‘self-regulated’ is emphasized. The importance of self-regulated learning strategies in academic performance and achievement has been well established in the traditional face-to-face environment (Dansereau, 1978; Weinstein, 1978; Gagné, 1985; Zimmerman & Martinez-Pons, 1986; Zimmerman & Martinez-Pons, 1988). Many studies on learning strategies have been conducted and identified to be effective ways of enhancing learning in print-based media (Ryan, 1984; Slife et al., 1985; Swanson, 1990; Applegate et al., 1994). In summary, learning strategies help learners to guide their own learning process and make appropriate decisions independently; learning strategies may also enhance learners’ motivation and self-esteem. Ignoring learning strategies may discourage learners from developing and exploring their own new learning strategies.

Recent literature in e-Learning supports the idea that learner issues are critical factors for achievement and satisfaction levels (Bonk & Dennen, 1999; Willis, 1994; Dille & Mezack, 1991; Lyman, 1998). In particular, the information related to learning styles and strategies has recently received more attention as being influential for e-learning environment design and more specifically for instructional strategies in the e-learning environment.

In summary, e-Learning is heavily expected to be tremendously learner-centered. Learner-centered environments require learners to make decisions by themselves throughout the learning process and to have a high level of self-regulated learning abilities. For these reasons, it is critical for e-learners, in particular novices, to acquire appropriate learning strategies. For learners who cannot manage effectively the complexity of this environment, there may be a need for explicit modeling or scaffolding support. Time management has been considered to be part of resource management (Zimmerman & Martinez-Pons, 1986) and part of self-management (Pintrich and DeGroot, 1990). Time management can deeply influence learning ability. Effective use of learning time is the product of learning strategies such as planning and goal setting (Zimmerman, Greenberg, & Weinstein, 1994).


**Study Methods and Procedures**

The participants were randomly selected 77 adult learners who were enrolled in one of the Korea's Digital Distance Universities. The study participants varied in terms of the school years, majors, ages, and genders (22 freshmen & 55 sophomores; 33 in social sciences, 22 in electronics and engineering, & 22 in arts; from 21 up to 57 years old; 46 males & 31 females).

Three kinds of questionnaires were employed and each item was designed with 5-point Likert scales: self-regulated learning strategies by Zimmerman and Martinez-Pons (a 14 Item questionnaire), self-efficacy by Pintrich and De Groot (a 9 item questionnaire), and e-learning strategies by Lee (a 39-item survey questionnaire).

14 self-regulated strategy items from Zimmerman & Martinez-Pons (Cronbach’s $\alpha = .90$) were 1) self-evaluating 2) organizing & transforming 3) goal setting & planning 4) seeking information 5) environment structuring 6) self-consequencing 8) rehearsing & memorizing 9) seeking assistance peer/teacher/adult, and 10) reviewing test/notes/texts.

9 self-efficacy items from Motivated Strategies for Learning Questionnaire (MSLQ) (Cronbach’s $\alpha = .89$) included 1) compared with other students in this class I expect to do well; 2) I’m certain I can understand the idea taught in this course; 3) I expect to do very well in this class; 4) Compared with others in this class, I think I’m a good student; 5) I am sure I can do an excellent job oh the problems and tasks assigned for this class; 6) I think I will receive a good grade in the class; 7) My study skills are excellent compared with
others in this class; 8) Compared with other students in this class I think I know a great deal about the subject; and 9) I know that I will be able to learn the material for this class.

39 e-learning strategies items from Lee (2001) included 8 categories: strategies of expression in text, group discussion, information processing, time management, multiplicity in interaction, information overload, asynchronicity management, and information interpretation.

For learning achievement analysis, individual learner’s one semester GPA (4.3 point scale) from totally 58 courses were examined. Mean, Pearson Correlation, and Multi-regression were computed for the questionnaires.

Research Findings

1. How are the self-regulated learning strategies, self-efficacy, and e-learning strategies related to student academic achievement within the e-learning environment?

The result showed that ‘time management’ (Beta =0.55, R=0.478, p < .001) was the most significant predictor on academic achievement. Next and last significant predictor was ‘group activity’ (Beta = -0.263, R-Square = 0.292, p < .001). For adult learners within the e-learning environment, the higher time management skill the better the academic achievement. And this result demonstrated that any sub strategies of the self-regulated learning strategies and self-efficacy did not predict academic achievement, see [Table 1].

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R²</th>
<th>B</th>
<th>F</th>
<th>P</th>
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<td>Time management</td>
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<td>0.228</td>
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<td>Information interpretation</td>
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<td>0.292</td>
<td>-.263</td>
<td>11.961</td>
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</table>

Table 1: Multi-regression of Strategy Variables for Academic Achievement (Step-wise)

In addition, only Lee’s e-learning strategies significantly predicted academic achievement (F=3.37, p=0.03); however, not Zimmerman’s self-regulated learning strategies (F=2.44, P=. 123) and Pintrich’s self-efficacy (F=3.51, p=0.065). See [Table 2].

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R²</th>
<th>F</th>
<th>P</th>
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<tr>
<td>E-learning strategies</td>
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<td>Self-efficacy</td>
<td>0.213</td>
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<td>.065</td>
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<td>0.588</td>
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<td>2.641</td>
<td>.011</td>
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Table 2: Multi-regression of Three Strategies for Academic Achievement

2. What are the relations among self-regulated learning strategies, self-efficacy, and e-Learning strategies?

There are positive and moderately high relations among self-regulated learning strategies, self-efficacy, and e-learning strategies, by indicating self-regulated learning strategies and e-Learning strategies (r=0.63871, p<0.001), self-efficacy and e-Learning strategies (r=0.61692, p<0.001), self-regulated learning strategies and self-efficacy (r=0.60482, p<0.001). As a result, the current research confirmed in the e-learning environment
the close correlation between Zimmerman’s self-regulated learning strategies and Pintrich’s self-efficacy well identified in the traditional learning environment. Moreover, it identified the close correlation between e-learning strategies and self-regulated learning strategies/self-efficacy. In the contrary, however, group discussion, information processing, and time management within Lee’s e-learning strategies were not associated with self-regulation and self-efficacy (p > 0.05) or slightly associated with. This result indicated that the traditional framework of self-regulation and self-efficacy might not comprehensively deal with e-learning strategies. See [Table 3].

<table>
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<tr>
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<th>self-efficacy</th>
<th>Self-regulated Learning</th>
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<td>76</td>
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</table>

**p < .01

Table 3: Correlations Among Three Strategies

Implications and Discussion

1. How are the self-regulated learning strategies, self-efficacy, and e-learning strategies related to academic achievement within the e-learning environments?

The results indicated that higher time management competency facilitated better learning achievement. Various researches on time management that can predict learning achievement (Britton & Tesser, 1991) or that is correlated with learning achievement (Macan, Shahani, Dipboye, & Phillips, 1990) are confirmed in the current e-learning context. In addition, the current research confirms various research that time management is the most predicting variable for learning achievement in e-learning environment (Lee, 2002; Lee, 2003; Jo & Lim, 2002).

However, the current results have not confirmed within the e-learning environment the relationships between academic achievement and self-efficacy and self regulated learning abilities suggested by Bandura (1986), Zimmerman & Martinez-Pons (1986), and Schunk (1986, 1996). Nonetheless, time management facilitated better learning achievement and as well was highly correlated with self-regulation and self-efficacy. This finding clearly indicated that time management may facilitate not only learning performance but also self-regulated learning participation with the e-learning environment.

2. What are the relations among self-regulated learning strategies, self-efficacy, and e-learning strategies?

Although correlation data cannot address causality, it appears that the learners who are better in self-regulated learning strategy are those who are better in e-learning strategy in general, those who are better in self-efficacy are better in e-learning strategy. But, some strategy variables with no or little relations are identified. What probably would it mean? There might be a high need for academic efforts to understand and identify specific self-regulation strategies newly appearing or more outstanding in e-learning environment. Especially, information interpretation, group discussion, time management, and information overload might be the ones that have been ignored in the research framework in F2F environment. In summary, the current research results implies that there would be limitations in supporting self-regulation in e-learning environment if we rely
on solely the models and schemes based on F2F environment such as Zimmerman & Martinez-pons’ and Pintrich & DeGroot’s

References


