Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi
Mustafa Kemal University Journal of Social Sciences Institute
Yıl/Year: 2010 ♦ Cilt/Volume: 7 ♦ Sayı/Issue: 14, s. 123 - 134

ASSESSING METACOGNITIVE AWARENESS AND LEARNING STRATEGIES AS POSITIVE PREDICTORS FOR SUCCESS IN A DISTANCE LEARNING CLASS*

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Abstract

The aim of this study is to investigate the effects of metacognitive awareness and learning strategies on students success in a distance learning class. The data were collected through Metacognitive Awareness Inventory (Schraw&Dennison, 1994) and Learning Strategies Questionnaire (Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J., 1993). The data were gathered from 126 undergaduate students. The results showed that 1. Metacognitive awareness and learning strategies has an important role on students' academic success in an online English course. 2. The subcale of metacognite awareness, evaluation strategy, was the positive predictor of academic success. 3. The subscales of MSLQ, organization and peer learning strategies were the positive predictors of academic success.

Keywords: *Metacognitive Awareness Strategy, Learning Strategy, Distance Learning, Academic acheivement*

UZAKTAN EĞİTİM SINIFINDA BAŞARININ POZİTİF YORDAYICISI OLARAK BİLİŞÖTESİ FARKINDALIK STRATEJİSİ VE ÖĞRENME STRATEJİLERİNİN DEĞERLENDİRİLMESİ

Özet

Bu çalışmanın amacı uzaktan eğitim sınıfındaki öğrencilerin başarısında bilişötesi farkındalık stratejisi ve öğrenme stratejisinin etkilerini araştırmaktır. Veriler "Metacognitive Awareness Inventory, (Schraw&Dennison, 1994) – Bilişötesi Farkındalık Envanteri- and Learning Strategies Questionnaire (Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J., 1993)- Öğrenme Stratejileri Envanteri- ölçekleri kullanılarak elde edilmiştir. Veriler araştırmaya katılan 126 lisans öğrencisinden alınmıştır. Araştırma sonucunda aşağıdaki sonuçlara ulaşılmıştır. 1. Uzaktan eğitimde verilen İngilizce derslerinde bilişötesi farkındalık ve öğrenme stratejilerinin öğrenci başarısı üzerinde önemli bir rolu vardır. 2. Bilişötesi farkındalık stratejisinin alt boyutundan olan değerlendirme stratejisi akademik başarının pozitif yordayıcısıdır. 3. Öğrenme Stratejilerinin alt boyutlarından organizasyon ve akran öğrenme stratejileri öğrencinin akademik başarısının yordayıcılarıdır.

Anahtar Kelimeler: *Bilişötesi Farkındalık Stratejisi, Öğrenme Stratejisi, Uzaktan öğrenme Akademik Başarı*

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* Bu çalışma 1-3 Haziran 2010 tarihinde Zirve Üniversitesinde düzenlenen First International Teaching Language Conference: Independent Learning kongresinde bildiri olarak sunulmuştur.

Introduction

Educational psychologists has given importance to the term metacognition for couple of decades. Because metacognition is important in learning and is a strong predictor of academic success (Kruger and Dunning, 1999). Metacognition refers to the ability to reflect upon, understand, and control one's own learning (Schraw&Dennison, 1994; Livingstone, 1997). Metacognition is an extremely important structure, affecting individual learning process (Akın, Abacı & Çetin, 2007). According to the Flavell (1979) metacognition is the individual's awareness of how he learns and what he does. Metacognitive awareness of individuals is regarded as an important factor in increasing of their learning throughout their life span, their creative and critical thinking, and building self-confidence (Memnun&Akkaya, 2009). Metacognitive awareness is the ability to reflect on their own thinking and develop and use practical problem-solving skills to resolve learning difficulties (Joseph, 2010).

Recent research indicates that metacognitively aware learners are more strategic and perform better than unaware learners (Garner&Alexander, 1989). Successful learners have a wide variety of thinking skills. They are aware of their knowledge and know when, where, and how to apply it to any learning situations. It is accepted that successful learners possess metacognition. One explanation is that metacognitive awareness allows individual to plan, sequence, and monitor their learning in a way that directly improves performance (Schraw&Dennison, 1994). Students with good metacognition are able to monitor and direct their own learning processes; they have the ability to master information and apply the learning strategies to solve problems more easily.

Kruger and Dunning, (1999) also claims that students with good metacognition demonstrate good academic performance compared to students with poor metacognition. Students with poor metacognition may benefit from metacognitive training to improve their metacognition and academic performance. Individual differences exist in metacognition and people with poor metacognition are deemed "incompetent" as they perform inadequately relative to their peers.

Stated very briefly, knowledge of person variables refers to general knowledge about how human beings learn and process information, as well as individual knowledge of one's own learning processess (Livingstone, 1997). Some students have the cognitive skills to recognize when they are doing well and when they are going in wrong direction. Working independently, these perceptive students use metacognition to plan, regulate, and assess their learning (Joseph, 2010). Ineffective learning strategies are linked to poor metacognition, revealing that struggling students have not developed the practical figure it out skills to approach classrooms challenges in a confident, independent manner (Hacker, Dunlosky &Graesser, 1998).

According to Ridley, Schutz, Glanz, & Weinstein (1992), the metacognitive learning strategies that autonomous learners can make use of include taking conscious control of learning, planning and monitoring learning strategies and progress, correcting errors, reflecting on the effectiveness of learning strategies, and making changes to learning behaviors and strategies accordingly. The control an autonomous learner exerts over his learning demonstrates his capacity to take control of his own learning (Benson, 2001).

The development of distance learning especially online learning has changed the traditional roles of teachers and students as well as teaching and learning methods. Online education resulted that students must have more responsibility in their own learning and they should be more autonomous in their learning process. According to Harris (2003) metacognition is concerned with guiding the learning process itself and so includes strategies for planning, monitoring and evaluating both language use and language learning; key elements in developing autonomy." Appropriate use of metacognitive learning strategies can contribute to the development of autonomy in distance learners, which is of paramount importance to their educational success (Zahedi&Dorrimanesh, 2008). Research studies in regard to the use of metacognitive learning strategies in distance education context reveal that distance learners need these strategies more than conventional learners (White, 1995).

Although the success of human activities is determined by a number of variables, an important position in the hierarchy of learning success is occupied by a person's *learning strategies*. Smith and Colb (1996) state that a person's learning strategy defines how he/she behaves in various everyday situations; he/she learns more effectively, easily, and comfortably when his/her learning needs are generated by his/her learning experience. In other words, a learning strategy outlines the way a person learns. For example, R. Dunn (1986) defines learning strategy as a way of perceiving and preserving information and abilities. Basically the presented definitions state that *learning strategy is linked with the way a person processes and perceives information in learning situations*. Moreover, scientists agree that learning ways and habits are a conditionally permanent construct, invariable in various learning situations and contents. However, in the course of time, learning strategies may change with changes in experience.

Simsek and Balaban (2010) found a positive and significant correlation between the use of learning strategies and the level of academic performance in their research. The more the learning strategies used, the higher the student performance was. However, the students did not prefer or employ all strategies equally. Cho and Ahn (2003) found similar results in their study, the results indicated that when students employ more strategies, they are likely to be more successful.

The present study seeks to examine metacognition awareness and learning strategies in relation to academic success. Academic success in this research refers to academic performance which is self- assessed by students having on line English courses. Because such assessments are efficient and relatively easy to administer; they take less time than other types of proficiency assessments (LeBlanc& Painchaud, 1985),

The purpose of this study is to investigate the effects of metacognitive awareness and learning strategies on students success in a distance English learning class . The following research questions were put forward in this study.

1) Do metacognitive and learning strategies effect students' academic success in a distance learning class?
2) Which subscales of Learning Strategies are positive predictors for academic success in a distance learning class?
3) Which subscales of metacognitive awareness are positive predictors for academic success in a distance learning class?

2. Methodology

This study was designed by using descriptive research model. Therefore, it focused on the effects of metacognitive and learning strategies on academic success in distance learning class.

Participants

The study was undertaken with 126 students (70 females, 56 males) from the first year students at the faculty of Education in Gaziantep University .

Table 1: *Information on the Subject Group (n=126)*

Variables Gender	N	%
Female	70	56
Male	56	44
Total	126	100
Self-assessment success category	N	%
Very good	23	18.3
Good	34	27.0
Fair	38	30.2
Poor	25	19.8
Very poor	6	4.8

Students state their achievement level such as very good (18.3%), good (27.0%), fair (30.2%), poor (19.8%) and very poor (4.85).

Instrument

The data collection instrument consists of two parts. The first part is about the subjects' personal information; the second part is about students' view on metacognition awareness and learning strategies. The data were collected through use of Metacognitive Awareness Inventory (Schraw&Dennison, 1994) and Learning Strategies Questionnaire (Pintrich, P.R., Smith, D.A.F., Garcia, T. & McKeachie, W.J., 1993).

MAI- Metacognitive Awareness Inventory: A total of 52 Items were accompanied by a 5-point response scale ranging from *strongy agree* to *strongly disagree*.. MAI includes several subscales *assessing knowledge of cognition* (declarative knowledge, procedural knowledge, conditional knowledge) and *regulation of knowledge* (planning, information management strategies, monitoring, debugging strategies and evaluation).

LSQ- Learning Strategies Questionnaire: The 46-item LSQ served to measure learning strategies students used in online courses. The learning strategies items were arranged from 1-7 points using the following descriptors: totally wrong, partly wrong, wrong, true, little true, partly true and totally true. MSLQ includes 9 subscales for assessing learning strategies (Rehearsal, Elaboration, Organization, Critical Thinking, Metacognitive Self-Regulation, Time and Study Environment, Effort Regulation, Peer Learning, Help Seeking).

The Turkish version of the Metacognitive Awareness Inventory and Learning Strategies were developed by using the back-translation method. Back translation was maintained through the procedure described by Brislin's (1970) classic back-translation model. First, the original version was translated into Turkish by an English teacher, and then cross-translation was performed by a second English Teacher who had not seen the original items. This back-translation was then compared with the original version to detect any discrepancies and the scale was completely identical to the original version. Although the participants were learning English at varies levels, the Turkish version of the questionnaires were given to the participants in order to avoid misunderstanding that might result from language. Before administrating the questionnaire, a pilot study was conducted for item clarity purposes, covered 45 students in various majors. The questionnaire was administered to the pilot group by the researchers themselves. On completion of the questionnaire, students were asked to comment on any ambiguous items in order to ensure content validity.

In order to scale the proficiency level of students, a separate section "self- rate proficiency" was added to the "personal information section". In addition to personal information about students' gender and proficiency level, students were asked to identify their achievement level based on a 5 levels, very good , good, fair, poor and very poor. These ranges means the scores levels the participants got during the

exams. Very good =85-100 , good=70-84, fair=50-69, poor=40-49, very poor= 0-39. Data collection took place in the beginning of the second semester. The participants completed the questionnaires in whole-class sessions. Data was obtained from instrument then organized into sub-scores and total scores for each sub-scale.

In order to test the reliability of the scales, the Cronbach Alpha Coefficients were calculated for subscales of questionnaires (Table 2) and the whole ones. The reliability of Metacognitive awareness scale is ("α .962"), and learning strategies scales have a high degree of reliability ("α .944").

Table 2: *Characteristics of instruments (N=126)*

Instrument	Numberof Items	Reliability
Metacognitive Awareness Inventory Subscales		
Procedural Knowledge	4	.69
Declarative Knowladge	8	.81
Conditional knowledge	5	.73
Planning	7	.78
Comprehension Monitoring	7	.82
Evaluation	6	.73
Debugging Strategies	5	.71
Information management strategies	10	.83
Total	52	.96
Learning Strategies Questionnaire subscales		
Rehearsal,	4	.73
Elaboration	6	.73
Organization	4	.68
Critical Thinking	5	.72
Metacognitive Self-Regulation,	11	.86
Time and Study Environment,	6	.65
Effort Regulation,	4	.63
Peer Learning,	3	.49
Help Seeking	3.	.40
Total	46	.94

Procedure

The data for the present study consisted of quantitative data gathered from the questions. Quantitative data in the second part were analyzed by calculating frequencies and percentages. The frequencies and percentages were calculated in order to see to what extent learning strategies and metacognitive awareness affect students academic success.

In the study, the hierarchical multiple linear regression results are focused on. These results define the effect of metacognitive awareness strategies and learning strategies displayed by students on their first year online English course success.

3. Findings and Results

The results of items related to metacognitve awareness strategies and learning strategies were presented in tables and explanations were provided accordingly.

Table 3: *The effect of Metacognive Awareness on English course success*

Model 3	Predicted variable : Academic achievement						
Variables	B	ShB	Beta	t	p	Zero-order	partial
Constant	1,130	,552		2,046	,043		
Metacognitive Awareness	,410	,146	,245	2,814	,006	,245	,245
R= ,245 R^2=,060 F (1, 124)=7,919 p= ,006							

As seen Table 3; at the first step, we have examined if the Metacognitive Awareness has an effect on the academic achievement and according to the Beta value Metacognitive Awareness has a statistically significant effect on academic success. This model explains the 6% of variance*??* in an English course academic success. F (1, 124)=7,919 p= ,006, β=.24. At the second step, the dimensions of Metacognitive Awareness strategies were examined to determine if which subscales of MAI has an effect on academic success.

Table 4: *The stepwise regression analysis results of effects of metacognitive awareness on an English course*

Model 4	Predicted variable : Academic achievement						
Variables	B	ShB	Beta	t	p	Zero-order	partial
Constant	,982	,485		2,024	,045		
Evaluation	,450	,128	,302	3,526	,001	,302	,302
R= ,302 R^2=,091 F (1, 124)=12,431, p= ,001							

Table 4 shows that only Evaluation strategy of Metacognitive Awareness Strategies has an statistically significant effect on academic success . This model explains the 9% of variance in an English course academic success F (1, 124)=12,431, p= ,001, β=.30.

Table 5: *The effect of Learning Strategies on English course success*

Model 5	Predicted variable : Academic achievement						
Variables	B	ShB	B	t	p	Zero-order	partial
Constant	,933	,345		2,701	,008		
Learning strategy	,420	,081	,422	5,183	,000	,422	,422
R= ,422 R^2=,178 F(1, 124)=26,865 p= ,000							

At the second part of this study, after examining the effect of Metacognitive Awareness on academic succes, we examined the effect of Learning Strategies on an online English course. The same steps were carried out as done before. Firstly we examined if learning strategies has an effect on academic success. As seen at Table 5, learning strategies has a statistically significant effect on academic success. This model explains the 17% of variance in an English course academic success. F(1, 124)=26,865, p= ,000, β=.42. At the second step, the dimensions of Learning Strategies were examined to determine if which subscales has an effect on academic success. Stepwise regression analysis were carried out to determine the subscales.

Table 6: *The stepwise regression analysis results of effects of Learning Strategies on an English course*

Model 6	Predicted variable : Academic achievement						
Variables	B	ShB	β	T	p	Zero-order	partial
Constant	1,302	,263		4,944	,000		
Organization	,323	,059	,442	5,485	,000	,442	,422
Constant	1,072	,270		3,977	,000		
Organization	,243	,064	,333	3,797	,000	,442	,324
Peer Learning	,197	,071	,244	2,782	,006	,393	,243
R= ,442 R^2=,195 F (1, 124)=30,086 p=,000 R= ,493 R^2=,243 F (2, 123)=19,731 p=,000							

Table 6 shows that only Organization and Peer Learning strategies have a statistically significant effect on academic success . When we look for Organization strategy, it explains 19% of variance on academic success. F (1, 124)=30,086 p=,000, β=,44. If we look for Organization and Peer Learning Strategies together, model explains 24% of variance on academic success. F (2, 123)=19,731 p=,000, β=,44. At the last step we examined Learning Strategies and Metacognitive Awarness Strategies together on academic success.

Table 7: *Multiple regression analysis of the effect of Learning and Metacognitive strategies on academic success*

Model 7	Predicted variable : Academic achievement						
Variables	B	ShB	B	T	p	Zero-order	partial
Constant	1,152	,518		2,225	,028		
Learning strategy	,461	,108	,463	4,247	,000	,422	,358
Metacognitive Awareness	-,104	,182	-,062	-,569	,571	,245	-,051
R= ,425 R^2=,180 F (2, 123)=13,521, p= ,000							

When Learning Strategies and Meatcognitive Awareness Strategies were examined together, only learning strategies has a statistically significant effect (β=,463, p=,000) on academic success. Metacognitive awareness strategies has no statistically significant effect on academic success. When we examine only learning strategy, model explains the 18% variance of academic success. F (2, 123)=13,521, p= ,000, β=-,06, p>,05. When we look generally at the findings, it can be said that Learning Strategies significantly predicts the academic success. Metacognitive awareness strategies has a little significant effect on academic success when we examine without learning strategy.

4. Discussion

The present study examined the relationship between metacognition and learning strategies and students' academic success. It was realized that the *learning strategies* has an important role on students' academic success in an online English course. So it is expected that students should be taught to use learning strategies and metacognitive awareness strategies effectively in their courses. *Metacognitive awareness* has also significant effect on academic success in an online course. In the sdudy, it was explored that the subscale of metacognitive, evaluation strategy, was the positive predictor of academic success in an online course F (1, 124)=12,431, p= ,001, β=.30. Evaluation strategy involves the following activities: 1. Determining the efficacy of one's efforts, 2. Self-reflective thinking about experiences and situations to determine if knowledge is adequate, 3. Determining what goals are to be set in light of one's self-efficacy. The results of the study are parallel with the results of some researches done around the world. For example, Camahalan (2006) in his research found that "…students are given opportunities to metacognitively think and explicitly taught of metacognitive strategies, academic achievement is more likely to be positively affected." We found in our study the same result when combined with learning strategy, metacognition has a significant effect on academic achievement. Curry (2006**)** found in his study that elaboration, critical thinking, and effort regulation were found to be positive predictors of success while organization was a negative predictor of success. Zimmerman and Pons (1986) points out that self -regulated learning strategies are correlated to achievement with 93% accuracy. In this study, we found that the subscales of MSLQ, organization and peer learning strategies are the positive predictors of academic success (R= ,442 ??=,195 F (1, 124)=30,086 p=,000 R= ,493 ??=,243 F (2, 123)=19,731 p=,000). Kosnin (2007) also found that time and study environment, effort regulation, peer learning and help seeking strategies are strong predictors of academic success in her research for undergraduate students. She also found that high achievers were using more metacognitive learning strategies than low achievers.

Organization strategies help the learner select appropriate information and also construct connections among the information to be learned. Examples of an organizing stretegies are clustering, outlinig, and selecting the main idea in reading passages. Organizing is an active, effertful, endeavor, and results in the learner being closely involved in the task. Collaborating with one's peers has been found to have positive effects on achievement dialogu with peers can help a learner clarify course material and reach insights one may not have attained on one's own (Pintrich,et.al 1993).

As Borkowski (1992) states, the potentially students who are identified as exhibiting less metacognitive awareness could be instructed and given practice in activities to develop their knowledge and regulation of cognitive activity.

The limitation of this study is that the study was carried out in a universty. It could be done in various institutions with many more students. So the result of the research can not generalized.

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