



The Relationship Between Critical Thinking and Self-regulation in Vocabulary Learning

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Abstract

With the flourishing interest in the role of learners in the field of second/foreign language learning and teaching, the quest for how students become self-regulated has attracted researchers for decades. The present study attempted to investigate whether there is any relationship between critical thinking ability and self-regulation in vocabulary learning of EFL learners. Therefore, in order to collect the related data, a revised version of the Vocabulary Levels Test (Schmitt, 2000) was administered to 130 students to establish their homogeneity in terms of their vocabulary knowledge. In the second stage, the critical thinking questionnaire (Honey, 2004) and the Self-regulating Capacity Vocabulary Learning Scale (Dornyei, Schmitt & Tseng, 2006) were administered to the selected participants to specify the critical thinking ability and self-regulation in vocabulary learning of EFL learners. The obtained results of the statistical analyses indicated a strong relationship between critical thinking ability and self-regulation in vocabulary learning. Moreover, there was a high correlation between the students' critical thinking ability and L2 vocabulary knowledge. In addition, the findings revealed that EFL learners' self-regulation in vocabulary learning was correlated with their L2 vocabulary knowledge.

Keywords

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Self-regulation
Vocabulary learning

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Kelime Öğreniminde Eleştirel Düşünme ve Özdenetim Arasındaki İlişki

Özet

İkinci/yabancı dil öğrenimi ve öğretimi alanında öğrencilerin rolünün ne olduğuna dair artan ilgiyle birlikte, öğrencilerin nasıl özdenetimci hale geldikleri arayışı onlarca yıldır araştırmacıları kendine çekmiştir. Bu çalışmada, İngilizceyi yabancı dil olarak öğrenenlerin kelime öğreniminde eleştirel düşünme yetenekleri ile özdenetimleri arasında herhangi bir ilişki olup olmadığı araştırılmaya çalışılmıştır. Bu nedenle ilgili verileri toplamak amacıyla 130 katılımcıya Kelime Bilgisi Düzeyleri Testi'nin (Schmitt, 2000) revize edilmiş versiyonu uygulanarak kelime bilgilerindeki türdeşlik tespit edilmiştir. İkinci aşamada, seçilen katılımcılara eleştirel düşünme becerisi ve sözcük dağarcığındaki özdenetimi belirlemek için eleştirel düşünme anketi (Honey, 2004) ve Özdenetim Kapasitesi Kelime Öğrenme Ölçeği (Dornyei, Schmitt & Tseng, 2006) uygulanmıştır. İstatistiksel analizlerden elde edilen sonuçlar, kelime öğreniminde eleştirel düşünme yeteneği ile özdenetim arasında güçlü bir ilişki olduğunu göstermiştir. Ayrıca, öğrencilerin eleştirel düşünme yeteneği ile yabancı dil kelime bilgisi arasında yüksek bir korelasyon olduğu saptanmıştır.

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Introduction

Recently, SLA researchers have shifted their attention to the effects of learner traits, particularly non-linguistic traits such as learning styles, affective variables, and critical thinking, on learning different aspects and components of a language. Ustunoglu (2004) argues that emphasis on the learner is a natural consequence of the shift from behaviorist to cognitive learning theories. That change has highlighted what the learner does and how the learner processes information during the lesson rather than focusing on what the teacher does. Along with reflections on the relationship between thinking and language, the cognitive method has been viewed in language instruction as an offshoot. Teachers who want to promote thinking should try to observe how students produce knowledge rather than how they merely reproduce knowledge. Knowledge production necessitates the use of a variety of cognitive abilities, including analytical, lateral, problem-solving, critical, creative, and reflective thinking.

On the other hand, sustaining the required critical thinking as a creative and improving tool for students during their academic activities process is another relevant factor that guarantees learners' success and L2 language attainment. This maintenance cannot be achieved with self-regulatory processes which can explain the self-initiative, resourcefulness, and persistence of proactive learners in pursuit of their learning goals (Cleary & Zimmerman, 2009).

Additionally, vocabulary learning is an essential and indivisible part of second/foreign language learning that students, teachers, material developers, and researchers all agree upon (Schmitt, 2008). Evidently, an ample repertoire of vocabulary knowledge is required for approaching different purposes; for instance, around 3000 written word families are needed for reading authentic texts (Laufer, 1997).

In this regard, over the last decade, the number of studies concerned with the effects of learner traits, affective variables, and critical thinking on learning a foreign /second language has increased considerably (e.g., Pintrich 2005; Bandura et al., 2008; Cleary & Zimmerman, 2009; De Groot & Pintrich, 1990; Dornyei, Schmitt & Tseng, 2006; Zimmerman, 2005). Due to this priority, it would thus be of interest to learn how students become proactive; that is "the use of the self-regulatory process by students to learn academic skills, such as setting goals, selecting and deploying strategies, and self-monitoring one's effectiveness" (Zimmerman 2008, p. 166) and above all, how students' critical thinking ability can fortify these action control mechanisms, especially in learning sufficient lexis for developing their language skills (Facione, 2009). The present study aims at investigating one dimension of the above-mentioned multifaceted domain, that is, the relationship between critical thinking and self-regulation in vocabulary learning of EFL learners. To find this kind of interrelationship appears to be crucial because it can extend our understanding of the impetuses underling vocabulary learning which is a core component of language proficiency and provides much of the basis for how well learners speak, listen, read, and write (Renandya & Richards, 2002). With this in mind, the following research questions were propounded:

1. Is there any statistically significant relationship between critical thinking ability and self-regulation in vocabulary learning of EFL learners?
2. Is there any statistically significant relationship between critical thinking ability and L2 vocabulary knowledge of EFL learners?

3. Is there any statistically significant relationship between self-regulation in vocabulary learning and L2 vocabulary knowledge of EFL learners?

4. Is there any statistically significant difference between critical thinking ability and self-regulation in vocabulary learning of male and female EFL learners?

Methodology

Participants

To accomplish the purpose of the research, a sample of 130 undergraduate male and female students from two universities in Iran, namely Azad University of Mashhad and Azad University of Quchan at the sixth, seventh and eighth semesters were chosen. Of the total participants, 100 took part in the study regarding the homogeneity of subjects. Their major was English language teaching and English translation. All of them were above 21 years old. The rationale behind the selection of senior students was to have students who, owing to the nature of English language teaching, need to have adequate vocabulary knowledge to cope with a variety of authentic texts, consequently, highly motivated in vocabulary learning.

Instrumentation

This study aimed to find out the relationship between high and low critical thinking of EFL learners and their self-regulation in vocabulary learning. In this regard, the instruments used in this research were as follows:

The Vocabulary Levels Test

The vocabulary level of the participants in the current study was assessed using a Vocabulary Levels Test by Clapham et al. (2001). The rationale for the test stems from research showing that vocabulary size is directly related to the ability to use English in various ways. The test consists of 150 items; every three items fall into a cluster that, on the whole, 30 items at five levels. In addition, there is a section for academic vocabulary.

The reliability indices (Cronbach's alpha) for all levels sections were all above 0.90. The Level Test is valid since it distinguishes between different proficiency groups. In terms of practicality, the Levels Test enjoys a high rate of usability. The Levels Test can be completed in a reasonable amount of time (average of 31 minutes); it is quick and easy to score, needs no special equipment, and gives a complete picture of a learner's vocabulary than most other tests.

Self-Regulating Capacity in Vocabulary Learning scale (SRCvoc)

The SRCvoc was developed by Dornyei, Schmitt, and Tseng (2006)-focusing on the realm of vocabulary learning--to measure language learner self--regulation (Appendix B). The questionnaire items (20 statements) involve a six-point Likert scale ranging from 'strongly agree' to 'strongly disagree', and respondents must mark their answers that best express their personal vocabulary learning experience. SRCvoc is composed of five subscales (commitment, metacognitive, satiation, emotion, and environmental control), each with four items; tapping into the learner's self-regulatory processes. To alleviate the problem of comprehension of the questionnaire by subjects, the English version of SRLvoc

was translated into Persian and then administered to a group of 50 respondents who were quite similar to target population as an initial pilot group. Based on the pilot group's feedback and according to the expert judgment of university professors in the field of English Translation, the questionnaire was fine-tuned and finalized. It should be mentioned that through employing the Statistical Package for Social Sciences (SPSS), the reliability of this questionnaire was 0.77 and considered acceptable.

Critical Thinking Questionnaire (CTQ)

The CTQ prepared by Honey (2004) aims to evaluate the participants' skills of analysis, inference, evaluation, synthesis, inductive, and deductive reasoning. Naieni (2005) translated the English version of the questionnaire into Persian to guarantee the full comprehension of the items by the Persian speakers and conducted a pilot study to determine its reliability index. The questionnaire was reported to enjoy a reliability of 0.86, which is acceptable for such a psychological questionnaire. The CTQ consists of 30 statements exploring what a person might or might not do when critically thinking about a subject. Five alternatives follow every item: never, rarely, sometimes, often, and always. The participants' scores were within the range of 30 to 150.

Design

The present study was descriptive and correlational. Mackey and Gass (2005) argue that descriptive research describes naturally occurring phenomena connected with language development and processing. Correlational study determines the existence of a relationship between variables and, if one exists, its strength. This is often measured statistically through correlations, which allows a researcher to determine how closely two variables are related in a given population.

The present study's design was ex-post facto since the researcher had no control over selecting and manipulating the independent variables (Hatch & Farhady, 1981). In this study, critical thinking will be taken as the independent variable and learners' self-regulation in vocabulary learning as the dependent variable.

To achieve the purpose of this study, the initial phase began with the translation of the self-regulation questionnaire into Persian with the consultation of experts in the field of English Translation. Then, the Persian version of the SRCvoc was piloted before launching the main project. It was put into actual practice by administering it to "a group of 50 respondents who were in every way similar to the target population" (Dornyei, 2007, p. 112), and finally, after necessary modification based on the feedback received from the initial pilot group, ran it through the final piloting. The reliability indices of the questionnaires and the study instruments were acceptable.

In the next phase, The Vocabulary Levels Test was administered and scored to specify the vocabulary knowledge of the individual participants and establish homogeneity by selecting 100 subjects. In the final phase, the Persian version of the critical thinking questionnaire was administered and scored along with SRCvoc to specify the rate of critical thinking ability and self-regulation in vocabulary learning of the selected subjects. The results of the CTQ were correlated with those of SRV voc and VLT in order to address the first and second research questions. In order to address the third research question, the correlation between the VLT and SRV voc was calculated. Finally, a repeated-measure ANOVA was used to determine any significance between critical thinking ability and self-regulation in vocabulary learning of male and female EFL learners. The confidentiality of the collected data was guaranteed by keeping the identity of the participants anonymous.

Results

Descriptive Statistics

As can be seen in Table 1, participants' mean score on Vocabulary Levels Test was 106.15. The highest and lowest scores obtained were 142 and 65, respectively.

Table 1. *Descriptive Statistics of The Vocabulary Levels Test (N=100)*

N	Valid	100
	Missing	0
Mean		106.15
Std. Deviation		16.531
Variance		273.280
Range		77
Minimum		65
Maximum		142

Regarding the critical thinking questionnaire, the maximum possible score on this questionnaire was 150, and the participants could obtain a minimum score of 30 on three levels, including comprehension, analysis, and evaluation.

Table 2. Descriptive Statistics of Critical Thinking Questionnaire

	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
item1 comprehension	4	1	5	2.48	1.030	1.060
item2 analysis	4	1	5	2.87	.906	.821
item3 evaluation	4	1	5	3.49	.948	.899
item4 comprehension	4	1	5	3.09	1.083	1.174
item5 analysis	4	1	5	3.70	1.106	1.222
item6 analysis	4	1	5	3.64	1.040	1.081
item7 comprehension	4	1	5	3.09	1.006	1.012
item8 analysis	4	1	5	3.03	.969	.938
item9 evaluation	4	1	5	3.12	.868	.753
item10 comprehension	4	1	5	3.55	1.058	1.119
item11 analysis	4	1	5	2.99	1.030	1.061
item12 evaluation	3	2	5	3.85	.892	.795
item13 comprehension	4	1	5	3.51	.959	.919
item14 evaluation	4	1	5	3.24	.922	.851
item15 evaluation	4	1	5	3.14	.921	.849
item16 comprehension	3	2	5	3.49	.893	.798
item17 comprehension	3	2	5	3.51	1.059	1.121
item18 evaluation	4	1	5	3.22	.970	.941
item19 comprehension	3	2	5	3.82	.881	.775
item20 analysis	4	1	5	2.71	.935	.875
item21 evaluation	3	2	5	3.66	.855	.732
item22 comprehension	3	2	5	3.85	.783	.614
item23 analysis	3	2	5	3.69	1.002	1.004
item24 evaluation	4	1	5	3.49	.882	.778
item25 analysis	3	2	5	3.84	.929	.863
item26 analysis	4	1	5	2.76	1.173	1.376
item27 evaluation	4	1	5	3.30	1.030	1.061
item28 comprehension	3	2	5	3.51	.859	.737
item29 analysis	4	1	5	3.33	.995	.991
item30 evaluation	4	1	5	3.39	.863	.745

Concerning Self-Regulating Capacity in Vocabulary Learning scale (SRCvoc), the maximum and the minimum scores of learners on five subscales of satiation, emotion, environmental, metacognitive, and commitment were 120 and 20, respectively.

Table 3. Descriptive statistics for (SRCvoc) Questionnaire

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
item 1 satiation	100	5	1	6	3.28	1.239	1.535
item 2 emotion	100	4	2	6	4.24	.980	.961
item 3 environmental	100	5	1	6	4.66	.955	.911
item 4 commitment	100	05	1	6	4.61	1.121	1.258
item 5 metacognitive	100	4	2	6	4.56	1.101	1.212
item 6 emotion	100	5	1	6	4.29	1.021	1.043
item 7 commitment	100	5	1	6	4.31	1.111	1.235
item 8 satiation	100	5	1	6	4.38	1.192	1.422
item 9 metacognitive	100	4	2	6	4.19	1.118	1.250
item 10 commitment	100	4	2	6	4.68	.942	.887
item 11 metacognitive	100	4	2	6	4.22	1.189	1.414
item 12 emotion	100	5	1	6	3.39	1.434	2.056
item 13 commitment	100	4	2	6	4.41	1.107	1.226
item 14 environmental	100	4	2	6	4.34	1.038	1.078
item 15 emotion	100	4	2	6	4.36	1.032	1.065
item 16 metacognitive	100	4	2	6	4.25	.954	.910
item 17 environmental	100	4	2	6	4.67	.963	.927
item 18 satiation	100	5	1	6	4.01	1.213	1.472
item 19 satiation	100	5	1	6	4.11	1.021	1.043
item 20 environmental	100	5	1	6	4.82	1.029	1.059
	100						

Inferential statistics

To answer the first research question, Pearson correlation coefficients between the three components of critical thinking--comprehension, analysis, and evaluation-- and five constructs of self-regulation--satiation, emotion, environmental, commitment, and meta-cognitive-- were conducted.

The results demonstrated a statistically significant correlation between critical thinking capacity and self-regulation in vocabulary acquisition among EFL students ($p < 0.05$). Referring to the collected data and its statistical interpretation, the relationship between critical thinking and self-regulation is quite strong here.

Table 4. Pearson Correlation between Components of Critical Thinking and Self-Regulation

		ANALYSIS	EVALUATION	SATIATION	EMOTION	ENVIRONMENTAL	COMMITMENT	METACOGNITIVE
COMPREHENSION	R	.791**	.794**	.538**	.575**	.812**	.674**	.634**
	P	.000	.000	.000	.000	.000	.000	.000
	N	100	100	100	100	100	100	100
ANALYSIS	R		.679**	.502**	.600**	.706**	.683**	.595**
	P		.000	.000	.000	.000	.000	.000
	N		100	100	100	100	100	100
EVALUATION	R			.613**	.653**	.906**	.785**	.825**
	P			.000	.000	.000	.000	.000
	N			100	100	100	100	100
SATIATION	R				.621**	.621**	.616**	.732**
	P				.000	.000	.000	.000
	N				100	100	100	100
EMOTION	R					.691**	.655**	.642**
	P					.000	.000	.000
	N					100	100	100
ENVIRONMENTAL	R						.797**	.759**
	P						.000	.000
	N						100	100
COMITMENT	R							.723**
	P							.000
	N							100

With regard to the second research question, the findings revealed that components of critical thinking had significant correlations with the vocabulary knowledge of the EFL learners. All of the R-values of; 0.79, 0.73, and 0.92 had probabilities lower than the significance level of .05.

Table 5. Pearson Correlation between Components of Critical Thinking Vocabulary Knowledge

		COMPREHENSION	ANALYSIS	EVALUATION
VOCABULARY	R	.793**	.735**	.929**
	P	.000	.000	.000
	N	100	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Considering the third research question, it was found that all components of self-regulation, i.e. satiation, emotion, environmental, commitment, and meta-cognitive, had significant correlations with the vocabulary knowledge of the participants in the study ($P = .000 < .05$).

Table 6. Pearson Correlation between Components of Self-Regulation Vocabulary Knowledge

		SATIATION	EMOTION	ENVIRONMENTAL	COMITMENT	METACOGNITIVE
VOCABULARY	R	.746**	.742**	.884**	.860**	.862**
	P	.000	.000	.000	.000	.000
	N	100	100	100	100	100

Finally, the repeated-measures ANOVA was run to probe any significant difference between critical thinking ability and self-regulation in vocabulary learning of male and female EFL learners. The F-observed value for the effect of the gender of the students was 1.73 (Table 7). This amount of F-value was lower than the critical value of 3.93 at 1 and 98 degrees of freedom.

Table 7. Repeated-Measures ANOVA Gender Effect

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
GENDER	159.960	1	159.960	1.731	.191	.017
Error	9055.943	98	92.408			

Table 8. Descriptive Statistics Total Mean Scores on Critical Thinking and Self-Regulation by Gender

GENDER	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
MALE	35.367	.544	34.287	36.447
FEMALE	34.450	.435	33.587	35.314

Based on these results, it can be concluded that there is not any statistically significant difference between critical thinking ability and self-regulation in vocabulary learning of male and female EFL learners is supported. The mean scores of male and female students on the critical thinking and self-regulation components are presented in Table 9.

Table 9. Total Mean Scores on Components of Critical Thinking and Self-Regulation by Gender

	GENDER	Mean	Std. Deviation	N
COMPREHENSION	MALE	32.74	4.615	39
	FEMALE	34.64	5.517	61
	Total	33.90	5.243	100
ANALYSIS	MALE	32.36	4.463	39
	FEMALE	32.69	5.055	61
	Total	32.56	4.812	100
EVALUATION	MALE	34.13	4.589	39
	FEMALE	33.75	5.127	61
	Total	33.90	4.904	100
SATITATION	MALE	34.77	6.5210566	39
	FEMALE	31.55	6.1430204	61
	Total	32.81	6.4561607	100
EMOTION	MALE	34.56	5.4644892	39
	FEMALE	33.09	3.9910628	61
	Total	33.66	4.6511285	100
ENVIRONMENTAL	MALE	39.85	5.9730199	39
	FEMALE	37.60	5.5956827	61
	Total	38.47	5.8211076	100
COMITMENT	MALE	38.08	6.3936117	39
	FEMALE	37.09	6.7166063	61
	Total	37.47	6.5780556	100
METACOGNITIVE	MALE	36.43	7.0870700	39
	FEMALE	35.17	7.9794510	61
	Total	35.66	7.6318838	100

Discussion and Conclusion

Nowadays, there has been an increased emphasis on the properties and outcomes of critical thinking in learning. According to Ku (2009), an important goal of modern education is to teach critical thinking, as it outfits students with the competency necessary to deal with overwhelming new information and resources of knowledge. In fact, it is a commonly-held perception among many educators which has left the learners more and more on their own to foster different skills and competence individually. To develop such competency, students must go beyond textbook-knowledge absorption and learn to build up flexible intellectual skills in the information-valued argument, evidence-based evaluation, and reason-driven argument. These perspectives are completely in line with recently emphasized learner-centered approaches and orientations that have dominated and drawn the attention of many educators as well as researchers in the domain of foreign/second language learning and educational psychology.

On the other hand, the different significant concept that displayed a unique contribution to learners' academic success is self-regulation. As Zimmerman (2002) expresses it so eloquently, "because to their higher motivation and adaptable learning strategies, self-regulated kids are not only more likely to achieve academically, but also more positive about their future." (p. 66). By the same token, another indivisible concept in foreign/second language learning field-which its need is particularly pressing-is *vocabulary knowledge*. Given the gradual nature of vocabulary acquisition and "because lexical items contain the basic information load for the meaning learners desire to perceive and communicate," lexical

elements bear a disproportionate amount of informational weight (Read, 2004, p. 146), it is excessively important to set up a systematic and durable study of vocabulary in the long-run and often tedious process of language learning. Undoubtedly, this cannot be realized save for incorporating two inevitable principles of language learning into the process, i.e. self-regulation; accordingly, the research was an attempt to study the relationship between critical thinking and self-regulation in vocabulary learning of a group of EFL learners.

Within the study's scope and sampling limitations, there is a significant relationship between critical thinking ability and self-regulation in vocabulary learning. In other words, a learner with higher critical thinking ability can have higher self-regulation regarding vocabulary learning. Another point worth mentioning is the high correlation between the students' critical thinking ability and L2 vocabulary knowledge. It shows that the students with higher critical thinking ability enjoy higher vocabulary knowledge of the language. It revealed that students who think critically to find a way and strategy for learning new vocabulary could learn quite significantly. In addition, the study revealed a relationship between self-regulation in vocabulary learning and L2 vocabulary knowledge of the students. Students with higher self-regulation can accomplish wider vocabulary knowledge. The reason for that might be the control learners have over their learning.

However, there was no significant difference between critical thinking ability and self-regulation in vocabulary learning of male and female learners. Therefore, regarding the above findings, gender cannot have an influential role in this field. Thus, it leads us to believe the idea that male and female students might have the same potential for robust critical thinking and self-regulation ability independent of their biological differences. In order to function effectively in society, confront urgent problems, and promote independent learning, individuals must be able to think critically and reason effectively. Since a significant relationship was found between the critical thinking ability and self-regulation in vocabulary learning of the EFL learners, it can be concluded that using critical thinking skills would help students cope with the L2 vocabulary more effectively and profoundly.

In addition, vocabulary is a fundamental element of language proficiency, serving as the foundation for how well language learners talk, listen, read, and write. Without a large vocabulary and self-regulatory mechanisms that maintain and manage vocabulary growth throughout the long-term language learning process, learners frequently fall short of their full potential. They may be discouraged from taking use of language-learning opportunities such as listening to the radio, native speakers, using the language in new circumstances, reading, and watching television.

Thus, the obtained results of the current study have highlighted the need for both learners and teachers to be aware that vocabulary learning is not unidimensional learning that solely depends on memorization. Learners need to bear in mind that in the long-term language learning process, they need to improve different self-regulatory strategies and adaptive skills to maintain and monitor their progress in language learning in general and vocabulary learning in particular. Likewise, teachers can generate a self-regulatory atmosphere inside the classroom and better tailor the classroom curriculum to help students foster their language competence; owing to the fact that "recent research shows that self-regulatory processes are teachable and can lead to increases in students' motivation and achievement" (Zimmerman, 2002, p. 69). Therefore, this study can be replicated to discern whether the same results would be obtained or not. Considering that this study was limited to senior university students, it is advisable that similar studies be conducted with learners with different proficiency levels.

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