The Effect of Metacognitive Strategies Instruction on Vocabulary Learning among Jordanian University Students

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Abstract: *Previous research works on strategy instruction show that not all L2 strategy training has been effective; the results of those research works have been inconsistent and inconclusive. The present research paper aims at identifying the effects of metacognitive strategy instruction on vocabulary learning of Jordanian university students through a ten weeks instruction program. To achieve this purpose, vocabulary tests based on Nation's (1990) vocabulary size test were used. Sixty students from Jordan University of Science and Technology were randomly chosen to participate in the present study. The students were randomly assigned to a control group (n=30), and an experimental group (n=30). Only the experimental group received explicit instruction on using metacognitive strategies while the control group did not receive any instruction. The instruction model was based on the Cognitive Academic Language Learning Approach (CALLA) proposed by Chamot and O'Malley (1994). The findings of this study revealed that the explicit instruction on using metacognitive strategies proved to be effective. The experimental group surpassed the control group in the post-instruction vocabulary test. The implication of this study is that metacognitive strategies instruction should be integrated into the regular vocabulary classes to help students become more autonomous learners.*

Keywords: *Metacognitive Strategies, Strategy Instruction, Vocabulary Learning.*

INTRODUCTION

Learning vocabulary is considered as an essential part when communicating in second or foreign language (Read, 2000; Meara, 2002; Al-Khasawneh, 2012). In teaching second or foreign language, teachers face difficulties to help students learn a notable amount of vocabulary. It is apparent that using dictionaries and repeating words many times are the most preferred strategies among students to learn new or memorize new words (Sardroud, 2013). According to Nielsen (2003), "research that has attempted to investigate which vocabulary strategies are most commonly used by second language learners has revealed that more mechanical strategies are often favored over more complex ones (p. 4)".

Vocabulary learning strategies have been defined in many ways and the definitions are highly related to language learning strategies definition (Catalan, 2003). Many scholars provide

different definitions of vocabulary learning strategies (see Table 2.6, page 73). Sokmen (1997, p. 237) defines vocabulary learning strategies as "actions made by learners in order to help them to understand the meaning of a word, learn them, and to remember them later". Cameron (2001, p. 92) views vocabulary learning strategies as "the actions that learners take to help themselves understand and remember vocabulary items". Similarly, Schmitt (1997, p. 203) claims that vocabulary learning strategies are "knowledge about the mechanisms (processes, strategies) used in order to learn vocabulary as well as steps or actions taken by students (a) to find out the meaning of unknown words, (b) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written model".

To provide a better understanding of vocabulary learning strategies, it is useful to classify vocabulary learning strategies first. Schmitt (1997) classified vocabulary learning strategies into two categories. The first category includes strategies for the discovery of a new word's meaning (e.g. Determination Strategies and Social Strategies). The other category includes strategies for consolidating a word once it has been encountered (e.g. Memory Strategies, Cognitive Strategies, and Metacognitive Strategies). Among the above classified strategies, metacognitive strategies are said to be the most fundamental strategies for learners to be independent learners (Anderson, 1991; Zhao, 2009; Tabeei, Tabrizi, and Ahmadi, 2013). According to O'Malley and Chamot (1990), metacognitive strategies are considered as the most essential strategies to reach learning autonomy. They also claimed that without metacognitive strategies, it would be difficult for learners to plan, monitor, and evaluate their learning progress.

METACOGNITION

Metacognition has long been recognized as the most significant component in language learning (Pintrich, 2002). The term metacognition first appeared in 1976 by the developmental psychologist John Flavell. Flavell defined metacognition as thinking about thinking. Its scholarly definition comes from cognitive psychology that links metacognition to the person's knowledge regarding one's own cognitive processes and products or anything related to them. Active monitoring, consequent regulation, and synchronism of these processes to achieve a goal also seem to be the necessary components of metacognition (Flavell, 1976; Goh, 2008).

The use of metacognitive strategies activates learners thinking and leads to improved performance in learning in general (Anderson, 2002). According to Wenden (1998), learners who have metacognitive abilities seem to have the following advantages over others who are not aware of the metacognition role in learning another language:
1) They are more strategic learners.
2) Their rate of progress in learning as well as the quality and speed of their cognitive engagement is faster.

3) They are confident in their abilities to learn.

4) They do not hesitate to obtain help from peers, teachers, or family when needed.

5) They provide accurate assessments of why they are successful learners.

6) They think clearly about inaccuracies when failure occurs during an activity.

7) Their tactics match the learning task and adjustments are made to reflect changing circumstances.

8) They perceive themselves as continual learners and can successfully cope with new situations.

The previous studies on metacognitive strategies emphasize the importance of metacognitive strategies instruction on the learners' learning progress (Zhao, 2009; Coskun, 2010; Wichadee, 2011; Tabeei, Tabrizi, and Ahmadi, 2013). In order to effectively instruct learners to employ metacognitive strategies, several models of metacognitive strategies instruction have been proposed. The Cognitive Academic Language Learning Approach (CALLA) model proposed by Chamot and Rubin (1994) proved to be the most effective strategy instruction model. In the CALLA model, students' prior knowledge and their habit of evaluation of their own learning seem to be the major principles. This model has five instruction phases as explained below (Chamot and Rubin, 1994, p. 43-44):

1) Preparation: students prepare for strategy instruction by identifying their prior knowledge about and the use of specific strategies. For example, setting goals and objectives, identifying the purpose of a learning task, over-viewing and linking with already known materials.

2) Presentation: the teacher demonstrates the new learning strategy and explains how and when to use it. For instance, explaining the importance of the strategy and asking students when they use the strategy.

3) Practice: students practice using the strategy with regular class activities such as asking questions, cooperating with others, and seeking practice opportunities.

4) Evaluation: students self-evaluate their use of the learning strategy and how well the strategy is working for them. For example, self-monitoring, self-evaluating, and evaluating their learning.

5) Expansion: students extend the usefulness of the learning strategy by applying it to new situations or learning for them. For instance, arranging and planning their learning.

To provide a clearer picture on the influence of metacognitive strategies instruction, a number of studies have been conducted. O'Malley and Chamot (1990) conducted a study to investigate the effect of metacognitive strategies instruction among American high school students. The students received instruction in metacognitive, cognitive, and socio-affective strategies. The students were divided into three groups: the first group received instruction in metacognitive strategies, the second group received instruction in cognitive and a socio-affective strategy only, and the third was control group which received no strategy instruction. Results showed that the

experimental groups performed better than the control group, and that the metacognitive group had a better performance than the cognitive group on the post-tests.

Thompson and Rubin (1996) studied the influence of metacognitive and cognitive strategy instruction on the listening comprehension performance of American university students learning Russian. The listening scores of the experiment group receiving systematic training in listening strategies were compared to the scores of a similar group who received no instruction over a two-year period. Pre- and post-tests showed that the students who received strategy instruction in listening to video-recorded texts improved significantly over those who had received no instruction at the end of the two years.

Vandergrift (2003) trained students in the use of prediction, individual planning, peer discussions, and post listening reflections that made up the metacognitive strategies in beginner elementary school and university contexts in France. Students in both groups were more focused on the advantages of predictions for successful listening, the place of collaboration with a partner for monitoring, and the confidence-building function of this approach for developing listening comprehension ability.

Recently, Tabeei, Tabrizi, and Ahmadi (2013) investigated the influence of teaching metacognitive strategies on listening comprehension among Iranian English as a Foreign Language (EFL) learners at Iran Language Institute (ILI) in Parsabad, Iran. For that purpose, 72 EFL learners were selected as the participants of the study. The learners were divided into two groups, one control and one experimental group. The Metacognitive Awareness Listening Questionnaire (MALQ) was administered to check the learners' awareness of metacognitive strategies. The experimental group was instructed to use metacognitive strategies based on Chamot and O'Malley (1994) model of metacognitive strategies, while control group did not receive any instruction. The findings of this study showed a positive effect of metacognitive strategies instruction on listening comprehension among Iranian learners. The findings also revealed that there was no difference between female learners and male with regard to listening comprehension after the instruction process.

RESEARCH QUESTION
The present study is motivated by the following research question:
1) Does metacognitive strategies instruction promote the vocabulary learning of Jordanian university students?

METHODOLOGY
Research Design
This research deals with the experimental design as it aims to examine the influence of metacognitive strategies instruction on the use of VLSs. In this study, the participants were

randomly selected and divided into experimental and control group. The experimental received explicit instruction on using metacognitive strategies, while control group did not receive any strategy-based instruction. Both groups received two tests (before and after the instruction process) to check the effect of the instruction process. These steps constitute the principles of quasi-experimental design. The independent variable in this study is the metacognitive strategy and the dependent variable is the vocabulary learning of experimental and control groups.

Participants

The participants of this research were 60 students, 30 in the control group and 30 in the experimental group. The students were belong to the three faculties (Medicine=20, Engineering=20, and Agriculture=20) at JUST. All students were considered as low proficiency in English language due to their scores obtained in the English language placement test conducted by the university at the beginning of each academic year. There were 30 female students and 30 male students in this experiment; the age range of the participants was between 18 and 24.

Research Instrument

Vocabulary size tests (pre-test/post-test) were used as a research instrument of the present study. The researcher used a pre-test which contains 50 multiple-choice items based on Nation's (1990) multiple-choice test in order to check the homogeneity of the two groups (control and experimental) in vocabulary size. The same test was also used after the training period in order to measure the outcome of metacognitive strategies instruction. Several reasons led this research to employ these tests. Read (2000) point out that Nation's test has proven to be a good diagnostic measure of vocabulary level and he assumes that VLT is almost the standard test of vocabulary. Nation (2001, p. 21) states that ―the test is designed to be quick to take, easy to mark, and easy to interpret‖. Moreover, it tests the English lexical proficiency of students from large samples of words from different word frequency levels, which being chosen randomly, represent the entire vocabulary at these levels (Nation, 2001).

Considering validity as one of the most important characteristics of a test, the vocabulary tests were based on Nation's (1990) multiple-choice test to measure the vocabulary size of the students. This test has been used as an instrument to measure the students' vocabulary knowledge in several previous studies. In terms of the validity of the training instruments, CALLA has been used in different contexts successfully. It is claimed on the website of the CALLA model that it is being implemented in approximately 30 school districts in the United States as well as in several other countries (Coskun, 2010). To ensure the reliability of the tests, reliability estimates included Cronbach's alpha was used to gain a satisfactory reliability. The value of Cronbach's alpha for pre-test was .717 which indicates good and satisfactory reliability value (DeVellis, 1991).

The Procedure of the Instruction

The strategy training was implemented over a span of 2 months and a half (i.e. week one to week 10). First, the vocabulary strategy training was given to both control and experimental groups. These sessions lasted for two weeks; each class lasted for one hour and 30 minutes (once a week). In lesson one, the teacher administered the pre-test to check the homogeneity of the two groups in vocabulary learning as mentioned earlier. In lesson two, the teacher explained the main purpose of conducting the experiment for both control and experimental group, and to present various VLSs exist for both groups as well. In lesson three, the teacher encouraged the students (control and experimental) to think about other vocabulary learning strategies they used and share the ideas together.

The second part of the training dealt with metacognitive strategies training. In this phase, only experimental group received explicit instruction on metacognitive strategies starting from the third week of the instruction process. The instruction procedure was based on CALLA model of teaching learning strategies which includes five main phases as follows:

- Preparation: the purpose of this phase was to explain and discuss the meaning of metacognitive strategies to the students, to show the main components of CALLA model, and to elicit the students' prior knowledge of metacognitive strategies. In this phase, the teacher showed the importance of metacognitive strategies and he distributed handouts containing various metacognitive strategies.

- Presentation: this phase concerned with making appropriate plan and set specific goals for vocabulary learning. The teacher discussed his own strategies employed to unknown words through reading task. The students were also taught about the different strategies which they might use to unknown words encountered in texts, the teacher provided illustrations and examples on using such strategies.

- Practice: in this phase of instruction, the students have been given the opportunity to practice using various metacognitive strategies with authentic learning tasks. They were also encouraged to make conscious efforts using metacognitive strategies in combination to vocabulary learning strategies. The teacher assisted and guided the students to monitor the various metacognitive strategies available to them. At the end of this phase, the students become aware of the different metacognitive strategies use in different tasks.

- Evaluation: the main purpose of this phase is to provide opportunities for the students to evaluate their strategies in learning English vocabulary. Through this phase, the teacher checked the students' development in metacognitive awareness in their vocabulary learning. The teacher used some activities to develop students' self-evaluation such as

self-questioning and checklists of strategies used. In those activities, the students expressed their beliefs and opinions about the benefits of metacognitive strategies.

- Expansion: in this phase, the teacher encouraged the students to use strategies they found most influential in their vocabulary learning. They have also told to apply those strategies in different tasks and contexts. At the end of instruction period, both control and experimental group were given the vocabulary post-test and it was compared with pre-test results to find out the effect of metacognitive strategies instruction in the students' vocabulary learning.

RESULTS

This section provides the findings obtained to answer the fourth research question: *Does metacognitive strategies instruction promote the vocabulary learning of Jordanian university students?*

Independent samples T-Test was used to analyze the possible variances in vocabulary learning between the two groups participated in the two vocabulary tests. The participants' scores in the vocabulary pre-test were analyzed to check the homogeneity of the two groups in the vocabulary knowledge level. The participants were considered as low proficiency students in English language due to their scores in the English language placement test administered by the university. The following tables reveal the vocabulary pre-test results before the metacognitive strategies instruction.

Table 1: Means and Standard Deviation of the Vocabulary Pre-Test

	Student's group	N	Mean	Std. Deviation	Std. Error Mean
TEST	Control	30	.4940	.08406	.01535
	Experimental	30	.5173	.10913	.01992

Table 2: Results of the Independent Samples T-test in the Vocabulary Pre-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TEST	Equal variances assumed	2.325	.133	-.928	58	.357	-.02333	.02515	-.07368	.02701

			-.928	54.452	.358	-.02333	.02515	-.07375	.02708
Equal variances not assumed									

The independent samples T-Test analysis of the pre-test scores shows no significant differences (t=-928; p>.05) between the mean scores of the students in the two groups. In other words, the two groups were homogeneous in terms of vocabulary knowledge at the beginning of instruction process. Subsequently, metacognitive strategies instruction was applied to the experimental group only while the control group did not take part in this phase of the experiment. In order to compare the effect of metacognitive strategies instruction on the students' vocabulary knowledge, both control and experimental group were administered a vocabulary post-test at the end of the instruction process (see Tables 3 and 4).

Table 3: Means and Standard Deviations of the Vocabulary Post-Test

	Student's Group	N	Mean	Std. Deviation	Std. Error Mean
TEST	Control	30	.5067	.10996	.02008
	Experimental	30	.5807	.15787	.02882

Table 4: Results of the Independent Samples T-test in the Vocabulary Post-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TEST	Equal variances assumed	4.096	.048	-2.107	58	.039	-.07400	.03513	-.14431	-.00369
	Equal variances not assumed			-2.107	51.778	.040	-.07400	.03513	-.14449	-.00351

As shown in table 4.53 above, the results of the independent samples t-test indicated that the mean scores of the experimental group (M= .580) were significantly different (t=-2.107; p<.05) compared to the control group (M= .506). In other words, the experimental group outperformed the control group in the vocabulary post-test. Therefore, the metacognitive strategies instruction seemed to have contributed to the vocabulary learning improvement of students.

DISCUSSION

This section provides discussions of the results of the experimental design. The comparison between scores in both tests (pre-test and post-test) demonstrated that experimental group has made a significant progress after the explicit instruction on using metacognitive strategies. These findings seem to corroborate with previous research works focused on other types of learning strategies such as mnemonic association (Cohen and Aphek, 1981), keyword semantic (Brown and Perry, 1991), monolingual dictionary (Ronald, 2001), and rote memorization, keyword, and semantic mapping (Sagarra and Alba, 2006). In addition, the results of experimental design are consistent with the previous studies on strategy training of other language skills such as listening performance (Vandergrift, 2003; Coskun, 2010), and reading comprehension (Ghazal, 2007; Celic and Toptas, 2010).

The results of this study suggest that it may be beneficial to raise the overall strategic awareness among learners by directing students' attention to the various strategies which learners feel comfortable and effective to use. To achieve the aforementioned point, explicit strategy instruction for students might be beneficial. Language teachers should introduce the various learning strategies to students, find out what strategies the learners are already using, help them to monitor the use of strategies based on different tasks, and help them to evaluate the effectiveness of using these strategies (Chamot and O'Malley, 1987).

CONCLUSION

The main purpose of the present study was to investigate the effect of teaching metacognitive strategies on vocabulary learning among Jordanian university students. For this purpose, the scores of control and experimental group were compared at the end of instruction period. The results revealed that the post-test scores of the experimental group were significantly higher than those of the control group. These results prove that the teaching on the basis of the CALLA model was successful to develop the students' ability to learn vocabulary. However, the results obtained cannot be generalized to all EFL contexts in Jordan as the number of respondents, instruction model, and the instruction period can easily change the results of such studies.

The results of experimental design might trigger more research works to explore the effectiveness of various strategy training or strategy instruction models on students' performance in English skills in general, and in vocabulary learning in particular. The studies which prove the effectiveness of strategy training may convince English learners, course book writers, teacher trainers, and curriculum designers to pay attention to the advantages and benefits of strategy training or instruction, and integrate these strategies in their classes, course books, and curricula. Many questions remain. This final chapter concludes the present investigation, yet also begins a new chapter for further research works.

REFERENCES

Al-Khasawneh, A., & Al-Khasawneh, F. (2012). English Language Learning Strategies Employed by Jordanian Students at Yarmouk University. *Language in India, 12*(7)*, 145-154.*

Anderson, N. J. (1991). Individual differences in strategy use in second language reading and testing. *The Modern Language Journal, 75*, 460–472.

Anderson, N.J. (2002). The role of metacognition in second language teaching and learning. *ERIC Digest*, 3-4.

Brown, T.S., and Perry, F. L. Jr. (1991). A Comparison of Three Learning Strategies for ESL Vocabulary Acquisition. *TESOL Quarterly, 25*(4), 655-670.

Cameron, L. (2001). *Teaching languages to young learners.* Cambridge: Cambridge University Press.

Catalan, R. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics, 13*(1), 54-77.

Çelic, S., and Toptaş, V. (2010). Vocabulary learning strategy use of Turkish EFL learners. *Paper presented at third international ELT conference: telling ELT tales out of school,* Department of English Language Teaching, Faculty of Education, Eastern Mediterranean University, Famagusta, North Cyprus.

Chamot, A., and O'Malley, M. (1987). The cognitive academic language learning approach: A bridge to the mainstream. *TESOL Quarterly, 21*(2), 227-249.

Chamot, A.U. & O'Malley, J.M. (1994). *The CALLA Handbook: Implementing the Cognitive Language Learning Approach.* Reading, MA: Addison Wesley.

Chamot, A.U., and Rubin, J. (1994). Comments on Janie Rees-Miller's 'A critical appraisal of learner training: theoretical bases and teaching implications': Two readers react. *TESOL Quarterly, 28*(4), 771-776.

Cohen, A. D., and Aphek, E. (1981). Easifying second language learning. *Studies in Second Language Acquisition, 3*, 221-236.

Coskun, A. (2010). The effect of metacognitive strategy training on the listening performance of beginner student. *Novitas-ROYAL, 4*(1), 35-50.

DeVellis, R.F. (1991). Scale Development: theory and applications *(Applied Social Research Methods Series,* Newbury Park: Sage Publications, 26.

Flavell, J., H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (ed.), *The Nature of Intelligence*, chapter 12, pp. 231–235. Lawrence Erlbaum Associates, Hillsdale, New Jersey.

Ghazal, L. (2007). Learning vocabulary in EFL context through vocabulary learning strategies. *Novitas-ROYAL, 1*(2), 84-91.

Goh, C. (2008). Metacognitive Instruction for Second Language Listening Development: Theory, Practice and Research Implications. *Regional Language Centre Journal, 39*(2), 188 -213.

Meara, P. (2002). The rediscovery of vocabulary. *Second Language Research*. *18*(4), 393-407.

Nation, P. (1990). *Teaching and learning vocabulary*. Boston: Heinle andHeinle.

Nation, P. (2001). *Learning vocabulary in another language* .Cambridge: Cambridge University Press.

Nielsen, B. (2003). A review of research into vocabulary learning and acquisition. Retrieved on January 19, 2014, from http://www.kushiro-ct.ac.jp/library/kiyo/kiyo36/Brian.pdf.

O'Malley, J., & Chamot, A. (1990). *Learning strategies in second language acquisition*. New York, NY: Cambridge University Press.

Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice, 41*(4), 219-225.

Read, J. (2000). *Assessing vocabulary*. Cambridge: Cambridge University Press.

Ronald, J. (2001). Learning about Learning from Dictionaries. Retrieved October 27, 2013 from http://wwwl.harenet.ne.jp

Sagarra, N., and Alba, M. (2006). The key is in the keyword: L2 vocabulary learning Methods with beginning learners of Spanish. *The Modern Language Journal, 90*(2), 228-243.

Sardroud, S. (2013). Impact of Training Deep Vocabulary Learning Strategies on Vocabulary Retention of Iranian EFL Learners. *International Journal of Applied Linguistics & English Literature*, *2*(3), 1-8.

Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt and M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 77-85).Cambridge: Cambridge University Press.

Sokmen, A. J. (1997). Current trends in teaching second language vocabulary. In N. Schmitt and M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 237-257). Cambridge: Cambridge University Press.

Tabeei, S., Tabrizi, A., & Ahmadi, G. (2013). The effect of metacognitive strategies instruction on listening comprehension of Iranian EFL learners: focusing on gender. *International Journal of Language Learning and Applied Linguistics World, 4*(4), 13-29.

Thompson, I., and Rubin, J. (1996). Can strategy instruction improve listening comprehension? *Foreign Language Annals, 29*(3), 331-342.

Vandergrift, L. (2003). From prediction through reflection: Guiding students through the process of L2 listening. *Canadian Modern Language Review, 59*, 425-440.

Wenden, A. (1998). Metacognitive knowledge and language learning. *Applied linguistics, 19*(4), 515-537.

Zhao, N. (2009). Metacognitive Strategy Training and Vocabulary Learning of Chinese college students. *English language teaching 2*(4), 123-129.