The Effects of Raising Iranian Intermediate EFL Learners’ Critical Thinking on Vocabulary Learning
Saeedeh Allahverdi Purfallah\textsuperscript{a, *}, Javad Gholami\textsuperscript{b}

\textsuperscript{a}SAMA technical and vocational training college, Islamic Azad university, Urmia, Iran. \textsuperscript{b}Urmia University, Urmia, Iran.

Abstract
This study is aimed at exploring the impact of applying critical thinking strategies (CTSs) and raising awareness on them on EFL learners’ vocabulary learning. As vocabulary learning is one of the major challenges foreign language learners’ face during the process of learning a language, one way to allay the burden is to assist language learners with applying CTSs during the process of L2 vocabulary learning. After administering Preliminary English Test, the researcher selected 60 female Intermediate students studying English at Arvand Language Institute in Urmia. Two parallel versions of Vocabulary Knowledge Scale (Pribakht and Wesche, 1993) were used as pre- and post-tests to gauge any significant differences between experimental and control groups. The experimental group was instructed on how to employ critical thinking strategies on vocabulary learning. T-test analysis revealed that there were significant differences between the performances of the experimental and control groups. According to the results of the post test, the experimental group manifested considerable improvement and interest in vocabulary following the use of CTSs contributed to better vocabulary learning.

1. Introduction
Second language (L2) acquisition depends crucially on the development of a strong vocabulary (Nation, 2001). Vocabulary is at the heart of general language development and conceptual learning (Pearson, Hiebert & Kamil, 2007). Seal, (1990, as cited in Celce-Murcia, 1991) states that to the non-language specialist, the common sense view of how languages are learned is that you substitute the words in your first language for the corresponding

*Corresponding author:
Email:saeedeh.allahverdy@gmail.com
words in the second language.

In the past, vocabulary teaching and learning were often given little priority in L2 programs, but recently there has been a renewed interest in the nature of vocabulary and its role in learning and teaching (Richards & Renandya, 2002). In recent years there has been growing interest across the world in ways of developing children’s thinking and learning skills.

The intellectual roots of critical thinking are as ancient as its etymology, traceable, ultimately, to the teaching practice and vision of Socrates 2,500 years ago who discovered by a method of probing questioning that people could not rationally justify their confident claims to knowledge. Confused meanings, inadequate evidence, or self-contradictory beliefs often lurked beneath smooth but largely empty rhetoric (Paul, Elder & Bartell, 1997).

2. Literature Review

Critical thinking skills aim at teaching the learner how to think rather than what to think (Taylor, 2001). In critical thinking, collecting, elaborating, and using data are crucial. The components of critical thinking which are reasoning, problem solving, and decision-making along with creative thinking are thought to be the skills of vital importance for success at school and in life (Collier Collier, K, Guenther, T., Veerman, C. 2002).

Thinking skills are relatively specific cognitive operations that can be considered the ‘building blocks’ of thinking. According to Kizlik (2011), thinking skills are as follows:

**Focusing Skills**: Attending to selected pieces of information and ignoring others.

1. Defining problems: clarifying needs, discrepancies, or puzzling situations.
2. Setting goals: establishing direction and purpose.

**Information Gathering Skills**: Bringing to consciousness the relative data needed for cognitive processing.

3. Observing: obtaining information through one or more senses.
4. Formulating questions: seeing new information through inquiry.

**Remembering Skills**: Storing and retrieving information.

5. Encoding: storing information in long-term memory.
6. Recalling: retrieving information from long-term memory.

**Organizing Skills**: Arranging information so it can be used more effectively.

7. Comparing: noting similarities and differences between or among entities.
8. Classifying: grouping and labeling entities on the basis of their attributes.
9. Ordering: sequencing entities according to a giver criterion.
10. Representing: changing the form, but not the substance of information.

**Analyzing Skills**: Clarifying existing information by examining parts and relationships.

11. Identifying attributes and components: determining characteristics or the parts of something.
12. Identifying relationships and patterns: recognizing ways elements are related.
13. Identifying main ideas: identifying the central element; for example the hierarchy of key ideas in a message or
line of reasoning.
14. Identifying errors: recognizing logical fallacies and other mistakes and, where possible, correcting them.

**Generating Skills:** Producing new information, meaning or ideas.

15. Inferring: going beyond available information to identify what may reasonably be true.
16. Predicting: anticipating next events, or the outcome of a situation.
17. Elaborating: explaining by adding details, examples, or other relevant information.

**Integrating Skills:** Connecting and combining information.

18. Summarizing: combining information efficiently into a cohesive statement.
19. Restructuring: changing existing knowledge structures to incorporate new information.

**Evaluating Skills:** Assessing the reasonableness and quality of ideas.

20. Establishing criteria: setting standards for making judgments.
21. Verifying: confirming the accuracy of claims.

Just as there are similarities among the definitions of critical thinking across subject areas and levels, there are several generally recognized "hallmarks" of teaching for critical thinking (see, for example, Beyer, 1985). These include:

- Promoting interaction among students as they learn - Learning in a group setting often helps each member achieve more.
- Asking open-ended questions that do not assume the ‘one right answer’ - Critical thinking is often exemplified best when the problems are inherently ill-defined and do not have a ‘right’ answer. Open-ended questions also encourage students to think and respond creatively, without fear of giving the ‘wrong’ answer.
- Allowing sufficient time for students to reflect on the questions asked or problems posed - Critical thinking seldom involves snap judgments; therefore, posing questions and allowing adequate time before soliciting responses helps students understand that they are expected to deliberate and to ponder, and that the immediate response is not always the best response.
- Teaching for transfer - The skills for critical thinking should ‘travel well’. They generally will do so only if teachers provide opportunities for students to see how a newly acquired skill can apply to other situations and to the student’s own experience.

To sum up, critical thinking involves identifying, evaluating, and constructing arguments and the ability to infer a conclusion from one or multiple premises. To do so requires examining logical relationships among statements or data. Decision Making Activities will offer many opportunities for the learners to define goals, find alternatives and select the best alternative.

Effective thinking is based on applying new learning to situations in order to solve problems, reach decisions, or make evaluations Cameron (1999, p.11). It involves:

1. The ability and general willingness to use knowledge to recognize, identify, and describe a problem.
2. The ability to apply appropriate analytic tools, weigh relevant evidence, make logical inferences and valid abstractions.

According to Brookfield (2010), developing critical thinkers has three central aims. The first is to help readers understand the phenomenon of critical thinking: to describe its essential components, to provide examples of how it can be observed in people’s actions, and to set out the research and conceptual base for this activity. The second aim is to examine the various methods, techniques, and approaches that can be used by anyone seeking to
help people develop better critical thinking skills. The third aim is to explore the opportunities for people to become critical thinkers in four specific arenas, all of which are central to most adults’ lives: in their intimate relationships, at their workplace, as part of their political involvements, and with regard to the mass media that influence their perceptions of the world. The intended readers are all those professionals, managers, and educators who seek to understand, and develop, skills of critical thinking in their colleagues, clients, learners, and peers.

3. Method

3.1. Participants
Participants in the study included 60 intermediate female language learners studying English as a foreign Language (EFL) at Arvand Language Institute in Urmia. It was a classroom experiment and for reasons of logistics, it was not possible to randomize the students, an intact group design was accordingly used in the study. As the groups were intact in design, they were semi-randomly assigned to control & experimental groups as recommended by Mackey and Gass (2005). The participants in this study with an age range of 20-27 were in the intermediate level, based on their performance on the Proficiency (PET) test, and all of them came from a bilingual background i.e. Turkish and Persian.

3.2. Materials and Instrument
The materials which were used in this study consisted of a) 504 Absolutely Essential Words (5th ed.) used as a course book in this study b) Vocabulary Knowledge Scale (VKS) by Paribakht and Wesche 1993 as a pre-test and post-test of this research. Tests of depth of lexical knowledge can broadly be classified into two categories: (a) tests attempting to analyse different aspects of lexical knowledge, and (b) ‘developmental’ tests “identifying levels of knowledge that may be interpreted as stages in the acquisition of the word” (Read, 1997, p. 315). Due to the difficulty of designing tests that accurately assess the complex multidimensional construct of lexical knowledge, existing tests mainly fall in category (b), typically using some sort of rating scale, in this case, VKS.

Table 1. The VKS scoring categories: Assignment of Scores to Responses

| Self-report Categories | Possible Scores | Meaning of Scores                      |
|------------------------|----------------|----------------------------------------|
| I                      | 1              | The word is not familiar at all         |
| II                     | 2              | The word is familiar but its meaning is not known |
| III                    | 3              | A correct synonym or translation is given |
| IV                     | 4              | The word is used with semantic appropriateness in a sentence |
| V                      | 5              | The word is used with semantic appropriate and grammatical accuracy in a sentence |

For example, an unsuccessful attempt at Level V or IV will result in a score of 2, 3 or 4. If knowledge of a meaning of the word is shown in a Level V response, but the word is appropriately used in the sentence context, a score of 3 is given - And so on.

Finally, the VKS’s proclaimed purpose to “track the early development of specific words in an instructional or experimental situation” (Wesche & Paribakht, 1996, as cited by Read, 2000, p. 33) seems to fit quite nicely with the assessment purposes of this research. The parallel form of the pre-test were used in the post-test, then the correlation coefficient between the scores obtained from the two forms as the estimate of the test score reliability.

3.3. Design
The design of the study was quasi-experimental design in order to have convenience sampling because it is often impossible for researchers to assign students randomly to language classes (Hatch & Farhady, 1981). For
reasons of logistics (Mackey & Gass, 2005), it was impossible to have true random sampling of the participants. One of the groups was semi-randomly assigned as the control group and the second group as the experimental group. In this study CTSs are considered as independent variables and vocabulary learning and raising awareness about them is considered as dependant variable.

3.4. Procedure

Two classes were, however, randomly chosen among numerous groups taking 504 absolutely essential words course at Arvand Language Institute in 2010. Students were placed in classes on the basis of PET as a placement test of Arvand Institute, this test was established the initial differences or similarities of two groups.

Two tests were used in this study in order to test the research question and investigate the impact of CTSs on EFL learners' vocabulary knowledge: pre-test and post-test according to VKS developed by Paribakht and Wesche (1993) used as a pre-test and post-test to trace any significant differences between the two groups' performance. One of the groups was semi-randomly assigned as the control group and the second group as the experimental group. The experimental as instructed on how to employ CTSs in vocabulary learning by researcher in 5 weeks, 3 sessions per week and each session 90 minutes during the September 2010.

During the treatment, the experimental group was taught how to learn L2 vocabularies by applying critical thinking skills. Additionally, they were taught how to illustrate the interrelationship among words by using critical thinking strategies. The activities used in experimental group share two basic characteristics: First, they all concentrate on various aspects of vocabulary awareness and secondly they encourage the use of dictionary work in the classroom, it is crucial that EFL teachers train their learners in the use of both monolingual and bilingual dictionaries. It is equally crucial that teachers emphasize the importance of using dictionaries for specified purposes (Moore, 2005 as cited in Palmberg, 2006).

In these activities, the instructor conducts an awareness-raising session in which the instructor and students discuss different L2 vocabulary learning strategies. The activity is based on a vision in which strategy-related instructional material “address students directly in explaining the value and purpose of learning strategies” (O’Malley & Chamot, 1990, p.213).

4. Results and Discussion

In order to make sure that the participants in both the experimental and control group were of the same proficiency level at the beginning of the study, an independent samples t-test was used. As shown in Table 3-4, the difference between the mean scores on the pre-test was not statistically significant (M EG: 18.00, SD EG: 8.175 & M CG: 17.40, SD CG: 1.484). This suggests that students in two groups were fairly homogeneous in their vocabulary knowledge at the beginning of the study.

Table2. Results for experimental and control groups

| Group Statistics | N | Mean | Std. Deviation | Std. Error Mean |
|------------------|---|------|---------------|----------------|
| pre-test scores  | experimental group | 30 | 18.00 | 8.175 | 1.493 |
|                  | control group      | 30 | 17.40 | 8.327 | 1.584 |
| post-test scores | experimental group | 30 | 34.33 | 12.344 | 2.254 |
|                  | control group      | 30 | 28.63 | 7.872 | 1.437 |
Table 3. Independent sample test based on pre-test and post-test scores of study groups

| Independent Samples Test | Levene's Test for Equality of Variances | t-test for Equality of Means | 95% Confidence Interval of the Difference |
|--------------------------|--------------------------------------|----------------------------|----------------------------------------|
|                          | F        | Sig. | df | Mean Difference | Std. Error Difference | Lower | Upper |
| Pre-test scores          | Equal variances assumed               | 0.11 | 0.97 | 0.03 | 0.59 | 0.673 | 0.6513 | 4.813 |
|                          | Equal variances not assumed           | 0.11 | 0.97 | 0.03 | 0.59 | 0.673 | 0.6513 | 4.813 |
| Post-test scores         | Equal variances assumed               | 9.317 | 0.04 | 2.139 | 0.097 | 5.700 | 2.673 | 3.50 | 11.071 |
|                          | Equal variances not assumed           | 9.317 | 0.04 | 2.139 | 0.097 | 5.700 | 2.673 | 3.50 | 11.071 |

The results showed that there was not a significant difference between the two groups (i.e. experimental and control groups) with regard to their pre-test scores:

\( t_{pre-test} (58) = 0.28; p>0.05 \)

On the other hand, there was a significant difference between the two groups with respect to their post-test scores:

\( t_{post-test} (58) = 2.13; p<0.05 \)

The tables show that the mean scores of the two groups were very close to each other in the pre-test, but the mean score of the experimental group was more that the control group in the post-test.

Table 4. Paired Sample Statistics between two pairs

| Paired Samples Statistics | Mean | N | Std. Deviation | Std. Error Mean |
|---------------------------|------|---|----------------|-----------------|
| Pair 1                    |      |   |                |                 |
| Experimental group pre test scores | 12.60 | 30 | 2.175          | 1.493           |
| Experimental group post test scores | 34.33 | 30 | 12.344         | 2.254           |
| Pair 2                    |      |   |                |                 |
| Control group pre test scores | 17.40 | 30 | 8.127          | 1.424           |
| Control group post test scores | 28.63 | 30 | 7.872          | 1.437           |

Paired samples t-test was utilized in order to see whether there were any significant differences between the pre-test and post-test scores of each of the groups. The results showed that the difference between the means was significant for both groups, hence their performances were different in the pre-test and post-test:

\( t_{experimental} (29) = -5.58; p<0.05 \) & \( t_{control} (29) = -5.24; p<0.05 \)

The results are shown in the following tables:

Table 5. Correlations between paired samples

| Paired Samples Correlations | N | Correlation | Sig. |
|-----------------------------|---|-------------|------|
| Pair 1                      | 30 | -0.186      | .326 |
| Experimental group pre test scores & Experimental group post test scores | | | |
| Pair 2                      | 30 | -0.077      | .684 |
| Control group pre test scores & Control group post test scores | | | |
Table 6. T-test in paired samples

| Paired Samples Test | Paired Differences | 95% Confidence Interval of the Difference | t | df | Sig. (2-tailed) |
|---------------------|--------------------|------------------------------------------|---|----|----------------|
| Mean                | Std. Deviation     | Std. Error                               | Lower | Upper |                |
| Pair 1: experimental group post test scores - experimental group post test scores | -16.393 | 16.020 | 2.925 | -22.313 | -10.476 | -5.324 | 29 | .000 |
| Pair 2: control group post test scores - control group post test scores | -11.233 | 17.443 | 2.184 | -15.610 | -8.848 | -5.239 | 29 | .000 |

As shown in tables 5-6 the correlation within each pair group is negative this means that within both groups posttest results are more that pretest scores, i.e. both groups get better results in the post-test in comparison with the pre-test.

5. Discussion

Learning strategies instruction can help “EFL learners become better learners. In addition, skill in using learning strategies assists students in becoming independent, confident learners (Chamot, 1999, p.1). Vocabulary learning strategies constitute a subclass of language learning strategies, which are applicable to a wide variety of language learning tasks, ranging from the more isolated (vocabulary, pronunciation, grammar) to integrative tasks like oral communication and reading comprehension. Studies such as Schmitt and McCarthy (1997) have shown that language learning strategies are not inherently ‘good’, but depend on the context in which they are used, their combination with other strategies, frequency of use, and the learners’ proficiency level.

The result of this study is in accordance with the previous studies such as Pressley et al. 1982, Huckin et al. 1993, Gu and Johnson 1996 and Kizlik 2010 who found that using critical thinking as one of the learning strategies had a significant effect on students vocabulary learning. The main objective of this study was the effect of applying critical thinking strategies on vocabulary learning.

Interestingly, even the strategies identified by Lawson and Hogben (1996) in their study on intentional vocabulary learning using example sentences and definitions on index cards differed substantially from the critical thinking strategies in the present study. Strategies such as reading of related words, sentence translation, simple use of context and complex use of context were not employed by learners in the present study. Three clearly identifiable strategies that they have something to share with CT skills, appear to overlap, however, across this study's learning paradigms are: simple word rehearsal (repetition), testing (self-generating target words), and mnemonic use.

6. Conclusion

In the present paper, it was argued that vocabulary is an important ingredient of language and vocabulary learning is an essential part of second or foreign language learning. Language learners need a wide array of target language words to be able to tackle successfully both production and comprehension activities in the second or foreign language. One way to help learners to enhance their knowledge of L2 vocabulary is through equipping learners with a variety of vocabulary learning strategies in this case critical thinking strategies. Most of the findings of this study turned out to be quiet congruent with those of Gu and Johnson's (1996), Schmitt's (1997), Kudo's (1999) and Gu's (2002) research.

The results proved that students did not believe in memorization; they rather believed that words should be studied and put to use. Students also tend to use many strategies (e.g. Note-taking, Guessing Strategies, skillful Use of Dictionary and so on.) in learning vocabulary.
While the study suffers from design problems of non-randomized sampling, and the findings may not be therefore be generalizable to wider similar contexts, the results reported here seem to suggest that the familiarity of learners with learning strategies in this case, critical thinking strategies will lead to better vocabulary learning although further research may be required to substantiate this claim, especially in other EFL contexts.

To sum up, learning new vocabulary is a challenge to foreign language students but they can overcome by having access to a variety of vocabulary learning strategies. Learners should then be trained in strategies they lack. To this end, teachers should consider the learners’ willingness and readiness to receive trainings and think of the most appropriate way to introduce the strategies.

References

Beyer, B.K. (1985). Critical thinking: What is it? "Social Education," 49, 270-276.
Brookfield, S. D. (2010). Developing critical thinkers: Challenging adults to explore alternative ways of thinking and acting. The Jossey-Bass higher education series and the Jossey-Bass management series. San Francisco, CA, US: Jossey-Bass. xvi, 293 pp.
Cameron, D. (1999). Communication skills as a gendered discourse. In S.Wertheim, A. Bailey, & M. Corston-Oliver (Eds.), Engendering communication. Berkeley, CA: Berkeley Women and Language Group.
Chamot, A. U. (1999). Learning strategy instruction in the English classroom. Retrieved January 7, 2007 from http:// www.Jalt-publications.org/tlt/article/1999/Chamot/
Collier, K, Guenther, T., Veerman, C. (2002). Developing Critical Thinking Skills Through a Variety of Instructional Strategies. An Action Research Project submitted to the Graduate Faculty of the School of Education as a Requirement of the Degree of Masters of Arts in Teaching and Leadership. Saint-Xavier University. Chicago, Illinois.
Hatch, E., & Farhady, H. (1981). Research Design and statistics for applied linguistic. Tehran: Rahnama Publications.
Kizlik, B. (2011). Thinking Skills Vocabulary and Definitions. Retrieved January 2, 2011 from http://www.adprima.com/thinkskl.htm
Lawson, M.L., & Hogben, D. (1996). The vocabulary-learning strategies of foreign-language students. Language Learning, 46(1), 101–135.
McCarthy (1988). Vocabulary and Language Teaching. NewYork: Longman.
Moore, J. 2005. 'Natural language learning (3). English Teaching professional 36: 29–31.
Nation, I.S. P. (2001). Learning vocabulary in another language. Cambridge: Cambridge University Press.
O'Malley, J. & Chamot, A. (1990). Learning Strategies in Second Language Acquisition. Cambridge: Cambridge University Press.
Richards, J. C., & Renandya, W. A. (2002). Methodology in language teaching: An anthology of current practice. Cambridge: Cambridge University Press.
Palmberg, R. 2004n. Developing EFL Learners’ Vocabulary Awareness. Karperö: PalmsoftPublications in association with EnglishClub.com. Available from English.Club.com at http://www.englishclub.com/esl-resources/ebdva.htm
Paribakht, T.S., & Wesche, M.B. (1993) The relationship between reading comprehension and second language development in a comprehension-based ESL program. TESLCanada Journal. 11(1): 9-29. 1993.
Paul, R., Elder, L., and Bartell, T. (1997). A Brief History of the Idea of Critical Thinking. Retrieved December 2010 from http://www.criticalthinking.org/CriticalThinking_org
Pearson, P. D., Hiebert, E.H. & Kamil, M. L. (2007). Vocabulary assessment: What we know and what we need to learn. Reading Research Quarterly, 42, 282-296.
Pressley, M., Levein, J. R. & Miller, G. E. (1982). The keyword method compared to alternative vocabulary learning strategies. Contemporary Educational Psychology, 7, 50-60.
Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt & M. McCarthy(Eds.),Vocabulary: description, acquisition and pedagogy (pp.199-228). Cambridge: Cambridge University Press.
Seal, B. D. (1991). Vocabulary learning and teaching. In M. Celci- Murcia (Ed.), TeachingEnglish as a second or foreign language. Boston, MA: Heinle & Heinle.
Taylor, Ch. (2001). ‘It’s the real thing’ Using Ads To Promote Critical Thinking In the EFL Classrooms. News In Brief. The Quarterly Newsletter of INGEDE, Pp.10-12.