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On the Role of Metacognitive Strategy Training for EFL Reading Comprehension in an Input-poor Environment

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ABSTRACT

Little investigations have been conducted to highlight the role of learner strategies, metacognitive awareness, and reading comprehension, particularly metacognitive strategy training, in the foreign language learning contexts; most notably in "*input-poor*" environments. This *experimental* study sought to establish the possible effects of metacognitive strategy training on reading proficiency of 60 ESL university students in an input-poor environment who were selected randomly and divided into the experimental and the control groups. This study adopted Flavell's model of cognitive monitoring and Vygotsky's metaphor of Zone Proximal Development with its concomitant *scaffolding* notion as its theoretical frameworks. Results from descriptive statistics and ANOVA indicated that the experimental group performed significantly better than the control group on reading tests at the significance level of .05. It is a testament to the phenomenal success of the metacognitive strategy training for EFL learners in an input-poor environment where conscious attention to learner strategies certainly merits closer consideration and is more critical than unconscious acquisition caused by exposure to ample foreign language input outside the classroom.

KEY WORDS: Metacognitive awareness, Metacognitive strategy instruction, Strategic-Based Instruction, Language learner strategies, Input-poor environment, Reading comprehension, Learner autonomy

1. INTRODUCTION

No one can question the central focus which reading receives in many EFL or ESL teaching and learning contexts [1]. Indeed, what students need in most EFL contexts is acquiring reading ability [1]. That reading is not a single-factor, but a multifactor and complex process is now regarded as a plain fact (e.g., [2], [3]). Getting to the heart of reading and recreating the writer's intended meaning is largely reliant on having automatic word-level skills, basic background knowledge, and a variety of comprehension strategies [4]. Therefore, success in L2 reading partly depends on the level of automaticity [5]. However, an optimal performance in L2 reading is unattainable merely by automatization, and it necessitates possessing a control or metacognitive processing on the part of readers ([6], [7]). In general, these control or regulatory processes are known as *metacognition or strategic competence* which plays a critical role in learning how to read efficiently and has a great influence on reading achievement [8].

Unlike unskilled readers, skilled readers are aware of which strategy to use and how to apply them; they also know the conditions under which these strategies should be used [7]. Findings on skilled and unskilled readers have led to the development of a new approach to study reading comprehension which concentrates on readers' *metacognition*. In the metacognitive approach to teaching, the teacher models and provides guided practice in some specific strategies employed by skilled readers.

It has been postulated that learning environment does influence the strategy use [9]. The English language learning environment in Iran can be characterized as an "*input-poor*" environment by Mahdavi (2013) [10] which has been defined by Kouraogo (1993) as "language learning contexts where learners have little opportunities to hear or read the language outside or even inside the classroom" [11] (p. 167). To compound the problem, even there are some untrained or poor-trained non-native speaker teachers who have not achieved mastery of English yet. Kouraogo (1993) states that a lack of motivation and a real opportunity to practice the language are major problems that may be found in many parts of the world and emphasizes the urgent need for conscious learning in these contexts [11].

1.1. Language learner strategy

Learning strategies are "special thoughts or behaviors that individuals use to comprehend, learn, or retain new information" [12] (p.1). Although it is still in its infancy and embryonic form, LLS research holds much promise in that countless of investigators have embarked on a voyage of discovery through a labyrinth of a stormy sea searching high and low to find the island so much to their liking that they decided to remain and, in fact, conquered some of what is now known as 'language learner strategies'. The research findings inside the field of LLS have corroborated the teachability of learner strategies to less successful language learners in order to help them become better and active language learners ([13], [9], [14], [15]). "The use of strategies embodies taking active, timely, coordinated responsibility for learning. This is both learnable and teachable" [16] (P. 52).

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It is most probable that a language is "the most complex set of skills one could ever seek to acquire" [17] (p. 208); hence, what Brown calls '*strategic investment'* deems essential for learners to gain mastery over language. Oxford (2008) noted that "learning strategies are generally signs of learner autonomy" [16] (p. 52). Hsiao and Oxford (2002) acknowledged that "[l]earning strategies for L2s help build learner autonomy, which requires the learner to take conscious control of his or her own learning process" [15] (p. 369). What seems to be quite clear is that proficient L2 learners show strong tendency to possess and employ a wide array of strategies than less proficient learners ([12], [9] [18].

As to the importance of learning strategies in FLLIPE (foreign language learning in input-poor environments), Kouraogo (1993) maintains that:

> Learning strategies deserve in fact more attention in these contexts where unconscious acquisition caused by exposure to an abundant second language input outside the classroom is likely to be less critical than conscious strategies in influencing gains in linguistic and communicative competence. [11]

1.2. Metacognition

"Hardly does anyone question the reality or the importance of metacognition" [19] (p. 351). O'Malley and Chamot (1990) emphasized the crucial role that metacognition plays in learning by noting that "students without metacognitive approaches are essentially learners without direction or opportunity to plan their learning, monitor their progress, or review their accomplishments and future learning directions [12] (p. 561).

To put it simply, metacognition refers to "thinking about thinking" and regulation of this thinking or our ability to know what we know and what we don't know and it is comprised of metacognitive knowledge and metacognitive regulation [20]. Metacognition was also characterized by Flavell as a "promising new area of investigation" [20] (p. 906).

Metacognition nurtures independent thinkers and lifelong learners who are able to grapple with new situations and learn how to learn and continue to learn throughout their lifespan in this hectic pace of life ([21], [22]). However, learning how to be mindful and manager of one's own learning is not inherited, nor does it happen naturally and overnight, it necessitates specific instruction of basic metacognitive skills and strategies.

Metacognition "has the potential to empower students to take charge of their own learning and to increase the meaningfulness of students' learning" [23] (p. 21), it also encourages learners to 'learn what to do when they don't know what to do' ([24], [25]). Similarly, Chamot et al. (1999) stated that "metacognition or reflecting on one's own thinking and learning is the hallmark of the successful learner" [26] (p. 2).

1.3. Metacognition and Reading Comprehension

Under a likely scenario, although provocatively enough, to the layman, there might be a widely-held belief that accomplished readers are just born that way; it is in their genes and chromosomes, and it is somewhat difficult for them to come to terms with the fact that learning to read, even in the first language let alone in a second or foreign language, shall not come naturally or for free and be inherited genetically. Yet, quite the reverse, "if a person is not taught to read… that person will not learn to read" [27] (p. 279).

Metacognition appears to be the cornerstone of thoughtful, active, and successful reading (e.g., [28]). Carrell et al. (1998) postulated that the most valuable strategies for developing reading comprehension are metacognitive strategies for monitoring comprehension, and for perceiving and tackling reading problems [29]. Such metacognition "entails knowledge of strategies for processing, texts, the ability to monitor comprehension, and the ability to adjust strategies as needed" [30] (pp. 240-41). Therefore, if metacognitive strategies are a key distinctive characteristic of skilled readers from unskilled or less skilled ones as well as an integral part of reading comprehension, and this is truly so, so as to develop independent self-regulated and proficient readers, metacognitive strategies instruction deems essential.

Generally, metacognition is the student's capacity to plan, monitor, and, if necessary, re-plan various reading strategies in the service of comprehension. As Baker and Brown (1984) contended "since effective readers must have some awareness and control of the cognitive activities they engage in as they read, most characterizations of reading include skills and activities that involve metacognition" [31] (p. 354). In a nutshell, effective readers are metacognitive, and metacognitive readers know what strategies to apply, how, when, and why to apply them; furthermore, they plan, monitor, evaluate, and regulate their own reading ([6], [31]).

A consensus has emerged from a wealth of information provided by research pointing to the fact that metacognition is comprised of two basic elements when applied to reading context, namely metacognitive knowledge or awareness and metacognitive regulation or control. Metacognitive knowledge is further subdivided into three other categories: *declarative* knowledge or knowing *what* (knowledge about self-characteristics, task characteristics, and task-relevant strategies), *procedural* knowledge or knowing *how* to use the different strategies involved in the construction of meaning from the text successfully, and *conditional* knowledge which refers to knowing *when* and *why* to apply strategies. Metacognitive regulation also encompasses *planning*, *monitoring*, and *revising* strategies. In teaching readers to be metacognitive, what seems to be vital is the incorporation of both aspects of metacognition into a training program.

1.4. Theoretical framework

The current research adopted Flavell's model of cognitive monitoring (1987a) for analyzing and interpretation of learners' strategies from a broad metacognitive perspective [32]. This model has been widely used in L2 studies by various researchers such as [33], [34], [35] for interpretation of learners' metacognitive knowledge of language learner strategies.

For raising metacognitive awareness of strategies among learners, Vygotsky's metaphor of Zone Proximal Development (1978) with its concomitant *scaffolding* notion, which both ZPD and scaffolding are parts of his Dialogic model) have been applied as the conceptual framework [36]. This model is considered as "the best-known sociocultural model of self-regulation and strategy instruction" [37] (p. 52) and it has been noted in many writings on L2 language and language learner strategies (for example, [27], [26]).

The following research question was put forward to answer by the study:

Research question: Does metacognitive strategy training enhance L2 reading comprehension in an "input-poor" environment?

Hypothesis: There is no relationship between metacognitive strategy training and L2 reading comprehension in an "input-poor" environment.

2. MATERIALS AND METHODS

2.1. Design of the study

This experimental study was concerned with the examination of the possible effects of the metacognitive strategy training for reading on EFL university level students' reading comprehension. For this investigative and experimental research to be undertaken, *a Pre-test Post-test Equivalent-Groups Design* served to complement the objectives of the present study.

Figure 2.1: *Pre-test Post-test Equivalent-Groups Design*

Group 1	R	O_1	X	O_2
Group 2	R	O_3	C	O_4

2.2. Participants

The students who took part in the study consisted of 60 (25 males and 35 females), 18-24 year-old university students majoring in biology at Islamic Tonekabon Azad University, Iran. Selection of the participants for the study was based on a simple random sampling from the one thousand freshmen university students enrolled in biology faculty. Through the Michigan Language Proficiency test, the participants were divided into two homogeneous groups of thirty subjects of whom one was randomly assigned as the experimental group and the other as the control group for the study.

2.3. Instrumentations

Two instruments were used in this study. Michigan Language Proficiency test was used for the purpose of homogeneity of two groups prior to the instruction. The students' reading proficiency prior and after the instruction was measured by TOEFL Reading Comprehension Subtest (TOEFL-RBC). This is a standardized multiple-choice reading comprehension test [39]. Qian and Schedl (2004) reported that internal consistency reliability was .93 in the sample of adult ELLs with various native language backgrounds [40]. The administration time was about 55 minutes.

2.4. Procedures

The study was conducted in three phases: 1) *Before* the instruction phase (Pre-test), 2) *During* the instruction phase (the experimental interventions), and, 3) *After* the instruction phase (Post-test).

In the first phase, after laying the ground for the study, the participants in both groups were pre-tested on TOEFL Reading Comprehension Subtest by the researcher. Both group answered the reading test in one session spending 55 minutes for the test. In the second phase, metacognitive strategy instruction was carried out.

Both the experimental and the control groups were instructed by the researcher for two times per week (totally 180 minutes per week) over a 14-week period. While the experimental group was trained through rather a new method of instilling strategies of improving reading comprehension into EFL language learners in an input-poor environment, namely metacognitive strategy instruction (*Transactional Strategy Instruction model*), the control group was taught through the *skill-based teaching method* which is the widespread method of teaching applied in Iran's reading classrooms. Besides *Transactional Strategy Instruction model*, the researcher made use of features of another strategy instruction model proposed by Philip (2005) which is called Self-regulated Approach to Strategic Learning (SRSL) [41].

And in the final stage, both the experimental and control groups were post-tested on the same measure which was used in the pre-test, namely TOEFL Reading Comprehension Subtest, immediately after the instruction.

The classroom procedure was divided into three phases: pre-instruction, instruction, and post-instruction phases. In the pre-instruction phase, the researcher tried to model each strategy explicitly by direct explanation and think-aloud technique. He clarified *what* the strategy is, why a strategy should be learned, *how* to use the strategy, *when* and *where* the strategy should be used, and *how* to evaluate the use of the strategy as the basis of a complete teacher explanation. Therefore, he made an attempt to scaffold the learners constructively. Then, they were afforded with ample opportunities to practice the explained and modeled strategies in different passages. They applied strategies with researcher's help. That is, they were dependent on their teacher's scaffolding.

In the instruction phase, the researcher supported learner strategy use through conceptual scaffolding. In so doing, he provided the learners with re-explanations of the previously taught strategies. In this phase, the learner became more independent in strategy use. Evaluations on the learners' strategy deployment were done via dialogical interactions. At the end of this phase, the researcher focused his efforts more on explicitly motivating the learners. Conceptual scaffolding faded away here.

In the post- instruction phase, the researcher encouraged and motivated the learners in their strategy applications. Conceptual scaffolding was beginning to fade away at this point in the belief that the learners must have already developed adequate metacognitive knowledge to be characterized as self-efficacious, self-confident and self-regulated learners in reality. The end product of this process is a strategic and self-regulated learner.

2.5. Strategies taught in the intervention

The strategies selected to be taught in this study are as follows:

A) *Metacognitive strategies:* Using prior knowledge, Determining what to read through skimming and scanning, Prediction and confirming prediction, Comprehension monitoring.

B) *Cognitive strategies:* Inferring, Paying close attention to reading, Pausing and thinking about reading, Overview statement (summary writing).

2.6. Data analysis

The data gathered through reading test was analyzed by using the *Statistical Package for the Social Sciences* (SPSS) for Windows version 19.0. Descriptive statistical procedures and analysis of variance (ANOVA) were used to ascertain the extent to which metacognitive strategy instruction influenced the learners' reading comprehension.

3. RESULTS AND DISCUSSION

In order to show the efficacy of the intervention, students' pre- and posttest scores on a standardized reading comprehension test was analyzed to see if there was a statistically significant difference between the experimental group (EG) and control group (CG). Means and standard deviations for pre- and posttest scores can be found in Tables 1. Despite the fact that the mean values of reading test for the EG (M= 12.06) and the CG (11.76) prior to the instruction were almost the same, the experimental group outperformed the control group in the post-test. The mean value for Reading comprehension of the experimental group in the post-test (20.16) is higher than that of the control group (16.50).

Table 1: Means and SD (standard deviations) for Reading Comprehension test

Tests	*Experimental group*		*Control group*	
	Mean	Std. Deviation	Mean	Std. Deviation
Pretest	12.06	2.50	11.76	3.16
Posttest	20.16	2.49	16.50	3.08

The analysis of variance (ANOVA) was also conducted for reading tests (Table 2). The significance value of .000, which is less than 0.05, indicated that there is strong evidence of a difference between control and experimental groups regarding reading comprehension test. The obtained *F* ratio of 121 with *1 degree of freedom* is greater than critical *F*. The null hypothesis that metacognitive strategy training does not improve L2 reading comprehension can be safely rejected ($p< 0.05$), and it can be claimed that the metacognitive strategy training process was highly effective for improving reading comprehension in an "input-poor" environment.

Table 2: Tests of Between-Subjects Effects

Source	Sum of squares	df	Mean square	F	Sig	Error	Total
Reading	140.40	1	140.40	121.00	0.000	66.13	20824.00

4. CONCLUSIONS

This study showed that metacognitive instruction for reading and vocabulary learning was phenomenally successful in an "input-poor" environment where "learning strategies deserve in fact more attention" [11] (p. 169). This

finding is in accordance with some other studies undertaken in other contexts (e.g., [42], [43]. These studies well-documented that metacognition seems to be the cornerstone of thoughtful, active, and successful reading and self-regulated and accomplished readers enjoy a variety of cognitive and metacognitive skills and demonstrate a remarkable capacity to exploit them before, during, and after reading for meaning construction and learning purposes.

Strategy instruction should provide a lot of opportunities for the readers practicing these strategies to deepen their understanding of them and to make them aware of howness, whyness, whenness, and whereness of their use. In the long run, placing emphasis on as well as devoting energy and attention to teaching strategies which enhances self-regulation empowers learners to become active learners.

Strategic reading seems to be the main characteristic of expert readers ([42], [44], [43]). Not only does metacognitive strategy training in the above-mentioned contexts help the learners to become better comprehenders, but also it equips them with some useful tools to develop their vocabulary knowledge independently. The word 'knowledge' in turn contributes to learners' language learning in general and comprehension in particular. All in all, metacognitive strategy training helps learners to take greater control of their own learning and become more successful than those who do not.

Teachers should weave metacognitive strategy training into everyday lesson, motivate learners to plan, monitor, and evaluate their own reading and vocabulary learning, and provide a supportive environment where strategies can be applied best putting emphasis on independent learning at the end of every reading lesson. They should scaffold the strategy training processes where scaffolding implies the teacher support. Teachers provide supports for students with guided practice in using strategy before applying them independently. After mastery of strategies by learners, teachers should descaffold them.

Thus, such awareness of strategies which is central to learners' language learning not only is important in aiding them to improve their reading comprehension but such awareness and mastery of the strategies puts the learners in active control of their own learning process and moves them one step forward toward the *learner autonomy* which seems essential for successful language learning in input-poor environments. This idea is in perfect harmony with an often-quoted proverb in the field of education, "Providing a person with a fish will feed him for a day but teaching him how to fish would provide food to last him a life time". Further research is also needed in order to reach conclusive results with regard to the efficacy of metacognitive strategy training in input-poor environment.

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