The Effect of Meta-Cognitive Strategy Training Basis on Self-Educating on English Language Reading Performance in High School Students: Case Study in Isfahan, Iran

Salar Faramarzi , PhD
Faculty of Education & Psychology
University of Isfahan, I.R. Iran

Hasan Karamalian, PhD,
Department of Psychology and Counseling
Payame Noor University
19395-4697,Tehran, I.R. Iran

Sedigheh Rezaei Dehnavi, PhD
Department of Psychology and Counseling
Payame Noor University,19395-4697,Tehran, I.R. Iran

Mahdieh Jali, M.A
Teacher of Education in Persian language
District 2-Isfahan province, Ministry of Education, Iran

Saeideh Botlani
M.A in Family Counseling

Abstract

The purpose of this research was to study the effect of self-educating meta-cognitive strategy training on reading performance of English language in the first grade of high school girl students in Shahreza(Isfahan,Iran) in 2008-2009.The method was experimental with pretest, posttest and control group. 40 students were selected through randomly cluster sampling. The instrument was Informal Reading Inventory (IRI) which its validity was approved. The data was analyzed by Covariance analysis. The results indicated self-educating meta- cognitive strategy training has significant effect on reading performance of English Language (p<0.001). This educational method can be used to improve students' performance in English Language reading skills.

Key words: Meta-Cognition, Self- educating, reading English Language ,Students.

Introduction

Reading is an important approach in the process of a child's development. This approach is one of the language receptive skills which affect human being's life and an accommodating life is not easily possible without ability in this skill. Also, it is one of the complicated and valuable mental functioning and basis of educational learning and other processes in life (Smith, 1998). The ability to read and comprehend a text is a special skill in educational achievement. Nevertheless, many students do not have such basic skills in reading and recognizing a text fundamental idea and messages and this problem affect undesirably on their ability in reading, comprehending and remembering the information in the text and in the following, many learning activities at school (Nelson, 2006). Most reading skills are set in two parts of word-analysis and comprehension (myers and paris, 1978). The last purpose of reading is comprehension (Mazaki, Simos and proto papas, 2006). Comprehension of a text needs different processes including decoding. Although decoding is a pre requisite of comprehension, it does not seem that there is a direct causal relationship between these two skills. A lot of past researchers and scholars in education have emphasized on comprehension and decoding skills education.

But today, with the cognitive psychological progress, the emphasize is mostly on cognitive psychological progress, cognitive aspects of comprehension (Malone and Mastropieri, 1992). Meta-cognition is a newest motto in educational psychology (Livingston, 1997) which points at our knowledge about our cognitive processes and how to use them to access learning purposes (Bieler& Snowman, 1993). Flavel (1985) defines meta-cognition as a person's knowledge in cognitive processes and its production or other related things. Brown (1978) describes meta-cognition as our knowledge of our cognitive processes or activities and using methods to regulate them. To him, this concept has an active cognitive component which is responsible for active reviewing, following regulation and organization of these processes in relation to related cognitive data. Flavel (1979) has divided meta- cognitive knowledge into three groups of person, duty and strategies. "Person" meta-cognitive knowledge contains the individual's beliefs and information about his/her nature and others.

"Duty" meta-cognitive knowledge shows the individual's awareness about the nature of a learning assignment and its type of needed process. "Strategy" meta cognitive knowledge includes individual's awareness about different types of cognitive and meta-cognitive strategies. Cognitive strategy helps us to prepare new information with past-learned information for its combination and storage in long-term memory, in other words, cognitive strategies are learning tools (Seif, 2000). Mental imagination, using keywords and making notes are some examples of cognitive strategies. In comparison, Meta cognitive strategies are tactics to control cognitive strategies and their direction .Dembo (1994) has said we can teach students various cognitive strategies, but if they do not have necessary meta cognitive skills or strategies and do not know when to use cognitive strategies or change them, they never will be skillful learners. He has divided these strategies into three groups: 1) planning strategies include purposes assignment, superficial review and making questions 2) management and control strategies contain testing himself/ herself, concentration and control on comprehension 3) regulating strategies contain reading speed. Researches in cognitive psychology reveal the importance of meta cognition in reading comprehension (Stevens, cited by camahalan, 2006). Hallahan& Kauffman (2003) believe that meta cognitive skills learning helps students with learning disorders or attention deficit.

The review of researches in learning strategies and cognitive and meta cognitive strategies have indicated that these strategic usages have positive effect on learning and educational progress. For example, Bieler& Snowman (1993) have cited researches such as scottparis and his colleagues in 1984 and 1986 have taught cognitive and meta cognitive skills to third and fifth primary school students and the results have shown those who are trained for these skills are much more ahead in reading and comprehension ability. Also, Flavel (1985) showed weak students are mostly in attentive to learning strategies and are not involved in metacognitive activities. In addition, they never feel to be involved in this domain. Meloth (1990), after studying 20 classes in grade three, come to this point that students' meta cognitive knowledge increase has a positive relationship with using comprehension and learning strategies. Collins et al (2006) observed that strong students in reading are in higher level than weak ones due to all three meta cognitive knowledge and cognitive regulation ability. The researches in Iran shows the positive effect of cognitive and meta cognitive strategies education on learning such as reading and comprehension, too.

For example, in her research, Ababaf (2006) explained successful learners use cognitive and meta cognitive skills. Mehrnejad (2008) in a research on girl students of grade five in primary school and grade three in guidance school concluded that there is high relationship between meta cognition and comprehension in both grades and also meta cognition level in guidance school students are higher than primary school ones. Valizadeh (2001) studied the effect of meta cognitive strategies education on high school boy students' reading and comprehension in Tabriz in 2000-2001 and found that education of these strategies has positive and meaningful effect on reading comprehension but not on learning speed. Also, fooladchang (2006) has emphasized on the effect of cognitive control and knowledge on primary school students reading skills and the teacher's role as a facilitator and creator of meta cognitive assessment. The positive and meaningful effect of meta cognitive strategies and attributive education on reading comprehension of girl students in the grade four of primary school in Isfahan is shown in Dehghani's research. Since a lot of Iranian students have difficulty in learning English as a second language and due to what is said so far, it is inferred that meta cognitive strategies education to students can affect on learning positively. Therefore, there is a question whether cognitive strategies education affects on students' English Language learning.

Method

The research method was experimental with pretest, post test, control group and random selection.

| **E** | Experimental group | R | O_1 | X | O_2 |
| **C** | Control group | R | O_3 | - | O_4 |

Population, Sample and Sampling method

The research population were all high school girl students in grade one in Shahreza in 2007-2008. Based on published statistics of Educational management, they were 1306 students. The multistep cluster sampling was used. First two high school were selected randomly, then from each high school, One class and at last 20 students of each class were randomly selected and set in two groups of experimental and control.

Instruments

To gather the information, it is used Informal Reading Inventory (IRI) which its validity is approved by researchers and skilled teachers basis on language knowledge of students. It has been acquired valuable information such as students' reading skills, reading level, types of error, techniques to face with unfamiliar words, their behavioral characteristics. Each test contains a short text of 150 words and each student reads it loudly and individually and finally answers 10 questions (3 multiple choice and 7 explanatory questions). It is important to be noted that the time of reading and pronunciation errors of each student in both experimental and control groups are registered in order to calculate reading level and correct reading amount.

Implementation

Since the research is experimental, to gather information and data, following steps are implemented.

1. Selection of sample group among students considering sampling method.
2. placement of sample groups into two groups: Experimental and control
3. Implementation of IRI on two groups to gather information due to reading functioning study as pretest.
4. Implementation of interventional method for experimental group is meta cognitive schedule of self-learning education as follow:

The educational design which is used for meta cognitive strategies education to student and has been got from chan's (1989) meta cognitive program. It is like a self-learning education and uses mutual techniques for comprehension skills improvement. Self- learning education supervises a set of methods to educate students in acquiring consciously personal control on learning assignment and also using of self-learning or self-talk to problem-solving process. This program includes 8 sessions that each session lasted 30 minutes:

Session 1: Extra information fading.
Session 2: detailed and unimportant information fading.
Session 3 and 4: Titling the paragraphs.
Session 5: Classifying the sentences due to their importance.
Session 6 and 7: Indentifying basic ideas in a paragraph.
Session 8: Review.

It is important to note that in these sessions, the teacher reminds students that concentration and attempt to delete its factors are important in comprehension. Also it is remembered that they can use noting or under line the important subjects to better understanding.
5-Implementation of reading informal test on two groups to gather information as posttest.

Data analysis method

It is used descriptive and inferential statistics. Based on research design, hypotheses Covariance analysis is used to compare two groups mean in reading function.

Findings

Table 1: descriptive indicators in different variables

Variable	Groups	phase	Mean	Standard deviation
Comprehension	Control	Pre test	11	7.58
		Post test	9.75	4.36
	Experimental	Pre test	17.25	7.77
		Post test	34.37	7.29
Reading correctly	Control	Pre test	17.00	6.54
		Post test	16.80	7.30
	Experimental	Pre test	7.35	5.42
		Post test	6.60	4.24
Reading speed	Control	Pre test	184.80	61.50
		Post test	175.75	59.16
	Experimental	Pre test	123.60	25.07
		Post test	122.05	26.82

In table 1 descriptive indicators of central tendency in variables such as comprehension, reading correctly, reading speed and reading functioning of English Language are shown in two groups.

The first hypothesis explains that meta cognitive strategies education has positive effect on English Language reading functioning in the first grade high school girl students in Shahreza in 2008-2009.

Before covariance test, Levin test is used to study groups variance equality presumption for English Language reading scores variable but the results were not significant ($P \leq 0.92$).

Table 2: Covariance analysis results of group membership effect on English Language reading scores of two groups.

Dependent variable	Research variables	Freedom degree	Squares mean	F	Sig.	Effect amount	Statistics power
English language reading scores	Pretest	1	3024.06	7.08	0.011	0.16	0.73
	Group member skip	1	9709.07	22.7	0.001	0.38	0.99

As it is seen in table 2, there is a significant relationship between pretest and post test ($p \leq 0/001$). Therefore, the variable which is related to pretest must be controlled to remove its effect on post test. Nevertheless, even after controlling the pretest effect, there is a significant difference between two groups in post test related to English Language reading scores and group membership clarifies 38 percent of changes related to reading scores in English language in pretest ($p \leq 0/01$). Also, statistic power shows that sample size was enough for analysis. Thus, meta cognitive strategies education was effective on English language reading scores increase in posttest. The second hypothesis reveals that meta cognitive strategies education has positive effect on English language reading functioning in the first grade high school girl students in Shahreza in 2008-2009.Levin test is used to study variance equality presumption and it showed there is not significant difference between groups variance in English Language reading comprehension scores in posttest ($p \leq 0/17$).

Table 3: Covariance analysis results of group membership effect on English language reading comprehension

Dependent variable	Research variable	Freedom degree	Squares mean	F	Sig	Effect amoung	Statistic power
English Language reading comprehension	Pre test	1	178/ 85	5/54	0/024	0/13	0/631
	Group member ship	1	4449/96	137/97	0/001	0/78	1

As it is seen in table 3 ,there is a significant relationship between pretest and posttest ($p \leq 0/001$) .Thus, the variable which is related with posttest must be controlled to remove its effect on posttest.

Nevertheless, even after controlling the pretest effect, there is a significant difference between two groups in posttest related to English language reading comprehension scores and group membership clarifies 78 percent of changes related to English language reading comprehension scores (p≥0/001). The statistic power shows the sample size was enough for analysis. Therefore, meta cognitive strategies education was effective on English language reading comprehension scores in posttest.

The third hypothesis explains that meta Cognitive strategies education has positive effect on English language reading correctly functioning in the first grade high school girl students in Shahreza in 2008-2009.

Levin test is used to study variance equality presumption and it showed there was not significant difference between groups variance in English language reading correctly scores in posttest (p ≤0/041) .

Table 4: Covariance analysis results of group member ship effect on English language reading correctly scores.

Dependent variable	Research variable	Freedom degrde	Squares mean	F	Sig	Effect amoung	Statistic power
English Language reading correctly scores	Pre test	1	18/75	0/513	0/478	0/014	0/10
	Group member ship	1	3122/23	85/35	0/001	0/79	1

As it is seen in table 4, there is a significant relationship between pretest and posttest (p ≥ 0/001) . Thus, the variable which is related with pretest must be controlled to remove its effect on pretest. Nevertheless, even after controlling the pretest effect, there is a significant difference between two groups in posttest related to English language reading correctly scores and group membership clarifies 69 percent of changes related to English language reading correctly scores (p≥ 0/001). The statistic power shows the sample size was enough for analysis. Therefore, the third hypothesis is accepted and meta cognitive strategies education was effective on English language reading correctly scores increase in posttest. Fourth hypothesis explains that meta cognitive strategies education was effective on English language reading speed functioning in the first grade high school girl students in Shahreza in 2008-2009.

Levin test is used to study variance equality presumption and it showed there was not significant difference between groups variance in English language reading speed scores in posttest (p ≤ 0/18) .

Table5: Covariance analysis results of group membership effect on English language reading speed.

Dependent variable	Research variable	Freedom degrde	Squares mean	F	Sig	Effect amoung	Statistic power
English Language reading Speed scores	Pre test	1	67336/33	193/8	0/001	0/084	1
	Group member ship	1	6/53	0/01	0/892	0/001	0/05

As it is seen in table 5 ,there is not a significant relationship between pretest and posttest(p ≥ 892) .Thus , the variable which is related with posttest must be controlled to remove its effect on posttest.

Nevertheless, even after controlling the pretest effect, there is not a significant difference between two groups in posttest related to English language reading speed scores and group membership clarifies 0/001 of changes related to English language reading speed scores (p ≥ 0/05).

The low statistic power shows the sample size was not enough for analysis. Therefore, the fourth hypothesis is not accepted and meta Cognitive strategies education was not effective on English language reading speed scores increase in posttest.

Conclusion

As it is said the first hypothesis concerning the effect of meta cognitive strategies education on English language reading functioning was approved. This results support the importance of meta Cognitive strategies education on learning.

In other words, meta Cognitive strategies education such as extra information fading, basic idea recognition, making abstract, … and also the explanation of how to use them can lead to students' awareness and consciousness in reading time and increases their meta cognitive knowledge about preson, duty and strategies. These results are congruent with Palinscar& Brown (1984), Graves (1986), Ababaf (2006) and Motavali (1997) concerning the positive effect of metacognitive strategies education on reading.

About the second hypothesis based on table 3, group membership clarifies 18 percent of changes related to English language reading comprehension scores in posttest and it can be found that metacognitive strategies education has increased English language comprehension scores in experimental group in posttest. This result is congruent with information process theory which knows metacognitive strategies as an important part of learning and comprehension.

Therefore, these strategies education can improve the function of unawarded individual in reading comprehension (Dehghani, 2007).

In the third hypothesis based on table 4, group membership clarifies 69 percent of changes related to English language reading correctly scores in posttest. Thus, it can be concluded meta cognitive strategies education has increased English language reading correctly scores.

They are congruent with Collins and et al (2006) findings. They found that strong students in reading are in higher level than weak ones in all three types of meta cognitive knowledge and cognitive regulation.Fooladchang (2006) came to this point that meta cognitive knowledge and control are important effective factors in Primary school students reading skills.

The fourth hypothesis concerning the positive effect of meta cognitive strategies education on students' English language reading speed functioning was not approved. It can be said since meta Cognitive strategies education increases attention and carefulness in learning situation (wool folk, 2001), Attention and carefulness not only increase reading speed but also it may decrease it. So, we can say these strategies education has not significant effect on English language reading speed. Of course, we could not find any researches here and it be said that these results need more researches and broader statistic population.

As a whole, based on the above results, it is suggested to pay attention to the effect of meta Cognitive strategies education not only in English language education but in other courses, other grades at school and thinking domains and in regulation of lessons schedules in all education courses, both real knowledge and meta Cognitive knowledge will be emphasized. Beside we can increase the teacher's awareness level in education and the benefits of these strategies while they are on duty course.

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