The Think-aloud Method in EFL Reading Comprehension

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Abstract: Think-aloud is a research method in which readers report their thoughts while reading, thereby researchers will be able to achieve a better view of the mental processes in which readers are engaged. Reading in a foreign language needs considerable efforts on the readers' part due to understanding of a text. Think-aloud is a method which helps the teachers to collect unseen processes such as inference or the use of prior knowledge by learner. In the present paper, the researchers have considered a type of verbal report and the way it can be used in foreign language reading comprehension along with strategy training. To this end, 32 subjects were selected randomly from among upper intermediate Iranian EFL male learners in Parsian English Institute in Tonekabon, Iran and divided randomly into two groups. The TOEFL test administered to the students. Finally, the data gathered by the experiment was analyzed through SPSS software, using Samples Independent t-test. The results revealed that there is significant increases in mean score of treatment group, confirming the positive effect of think-aloud method on improving learners' reading comprehension.

Key words: The Think-aloud Method- Introspection- Reading Comprehension- Cognitive Process

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INTRODUCTION

Typically, good readers only become aware of their strategy use when they recognize that they are failing to comprehend. They then are cognizant of the need to re-evaluate their strategy use in order to remedy their failure to comprehend. Furthermore, good readers are more likely to fall back on appropriate strategies when the need to change strategies becomes apparent. For most poor readers however, using a variety of strategies, using strategies appropriately, and monitoring strategies is not automatic. So, teachers need to recognize their students' learning habits, the problems the students encounter while grappling with the intricate system of the foreign language and provide them with evidence of the usefulness of certain strategies. But how it is possible?

Think-aloud as originally developed by Newell and Simon (1972, cited by Block, 1986) to study problem-solving strategies. "One way for teachers to know what reading strategies students are using and help them use effective strategies in their reading is to engage them in think-aloud protocols. With think-aloud protocols, students verbalize, in an interview context, how they are processing the text they are reading" (Jacobson, 1998). Therefore modeling strategic behaviors for struggling readers by thinking aloud for them while they read (and hence, allowing students to think along), is the first step in raising their awareness of what it means to be a strategic reader. By analyzing the results, he can pinpoint the individual student's needs and provide appropriate instruction.

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Oster (2001) refers to the think-aloud "as a technique in which students verbalize their thoughts as they read and thus bring into the open the strategies they are using to understand a text", but they are not expected to analyze their behavior as in introspection (Cohen, 1987). This metacognitive awareness (being able to think about one's own thinking) is a crucial component of learning, because it enables learners to assess their level of comprehension and adjust their strategies for greater success. By getting students to reflect on the process of thinking aloud as they read, we're encouraging them to recognize the difference between reading the words and comprehending the text. By talking about their own strategy use, students gain insights into the complexities of reading, and hence expand their understanding of what it means to be a "good reader." Accordingly, this study attempts to consider a type of verbal report and the way it can be used in foreign language reading comprehension along with strategy training.

The study is designed to address the following specific question:

- Does the think-aloud method have a reliable effect on EFL learners' reading comprehension proficiency?

To answer the mentioned research question, the following null hypothesis has been formulated:

H0. Using the think-aloud method in a reading class have no significant impact on EFL learner's reading comprehension.

THE THINK-ALOUD METHOD: GAINS AND PRINCIPLES

A proven instructional technique for improving comprehension, as Duke and Pearson believe, is think-aloud. Along with them, Kucan and Beck consider think-aloud as a method of inquiry, a mode of instruction, and a means for encouraging social interaction. As a method of inquiry, the analysis of verbal reports provided by readers thinking aloud revealed the flexible and goal-directed processing of expert readers. As a mode of

instruction, thinking aloud was first employed by teachers who modeled their processing during reading, making overt the strategies they were using to comprehend text. Subsequently, instructional approaches were developed to engage students themselves in thinking aloud. Such endeavors revealed facilitation effects on text understanding. Current efforts to engage students in constructing meaning from text in collaborative discussions seem to indicate a new direction for think-aloud research, one in which social interaction assumes increased importance.

Verbal reports and think-aloud protocols have been widely used in both L1 and L2 reading research with the aim of studying the mental processes of readers in different situations. The purpose of the different studies has been to:

- Develop a taxonomy of reading strategies (e.g. Anderson, 1991; Olshavsky, 1977),

- Compare first and foreign language reading and find evidence of strategy transfer from the native to the foreign language (e.g. Sarige, 1987),

- Identify the reading strategies of 'good' and 'poor' readers (e.g. Block, 1986),

- Investigate the effect of previous knowledge on reading comprehension (e.g. Pitchard, 1990), and

- Describe strategies used in taking reading comprehension tests (e.g. Anderson, Bachman, Perkins & Cohen, 19910.

Tinzmann et al. (1990) consider that getting students into the habit of thinking out loud enriches classroom discourse. Beside them, Ozek and Civelek (2006) point out that the think-aloud method can be used as a diagnostic tool to analyze students' strengths and weaknesses in reading since it reveals rich information about how readers carry out mental activity, which is unobservable (Block, 1986). TAPs (Think-Aloud Protocols) provide rich information about how learners solve problems, what difficulties they encounter and to what extent and in what contexts they use certain strategies in a learning task (Someren et al., 1994 p.8). As students think out loud with teachers and with peers, they gradually internalize this dialogue; it becomes their inner speech, the means by which they direct their own behaviors and problem-solving processes (Tinzmann et al. 1990). Therefore, as students think out loud, they learn how to learn. They develop into reflective, metacognitive, independent learners, an invaluable step in helping students understand that learning requires effort and often is difficult. It lets students know that they are not alone in having to think their way through the problem-solving process (Available at teachervision website). Wilhelm (2006) also cites ''it gives us glimpses into hidden activity, allowing us to infer what is happening below the surface of consciousness.'' (p. 20)

Gunning (1996) concludes that think-aloud is used to model comprehension processes such as making predictions, creating images, linking information in text with prior knowledge, monitoring comprehension, and overcoming problems with word recognition or comprehension. On the other hand, if a researcher is interested in the amount of background knowledge individual readers bring to the reading task and how background knowledge is activated in the reading process, think-aloud will most probably provide the required data.

Thinking aloud is a method which, in principle, does not lead to much disturbance of the thought process. The subject solves a problem while the talking is executed almost automatically. So the data gathered are very direct, and there is no delay. The subject does not give an interpretation of his or her thoughts nor is he or she required to bring them into a predefined form as in structured techniques. He or she renders them just as they come to mind. Think aloud protocols are not necessarily complete because a subject may verbalize only part of his thoughts. Compared with structured elicitation techniques, the think-aloud method makes it easy for the subjects, because they are allowed to use their own language. Structuring the information is the task of the person who will analyze the protocols (Someren, Barnard and Sandberg, 1994).

Since students need to think while they are reading, they need instruction from the teacher and modeling, guided practice and reflection if reading strategy training is to be successful (Chamot and O'Malley, 1994, p.11 cited by Lavadenz, 2003; Farr and Conner, 2004). There is no magic formula or set of steps which will make this method (or any other) successful. Success lies in how you use it– which means choosing appropriate texts, listening carefully to students, determining students' abilities, and adapting the method to your own students' needs and abilities. In order to do this successfully, we feel that it is important to understand why the method works. In other words, you need to have a basic understanding (Winograd and Hare, 1988) of what you're trying to accomplish by using this method. Thereby only asking students to use a strategy to solve complex problems and perform sophisticated tasks is not enough. Each strategy must be used analytically and may require trial-and-error reasoning. Introduce the strategy by saying, "The strategy I am going to use today is estimation. We use it to . . . It is useful because . . . When we estimate, we…"

In schools where teachers work collaboratively in grade-level teams or learning communities, teachers can plan and rehearse thinking out loud with a partner before introducing the strategy to students. This is especially useful when the whole school is focusing on the same strategy, such as using learning logs or reflective journals in content area classes or applying fix-up strategies when reading informational and story texts (Farr and Conner, 2004).

As Someren (1994, p.36 cited by Ozek and Civelek, 2006; Richard T. and Vacca) notes, think-aloud works better when a task is difficult so that students cannot solve all of it in an automated manner. Ericsson and Simon (1993), when considering the possibility of verbalization during text comprehension, claim that easy and well-written texts are not suitable for verbalization because most reading are done rapidly and automatically, so whatever the reader can say loud is merely the reproduction of the text itself. As soon as the text gets more difficult due to its topic, organization, poor writing or unfamiliar writing style, reading starts to become a problem-solving task and verbalization can produce information. This is why think-aloud is particularly suitable for examining the strategies of those poor readers who encounter difficulties why trying to read an unfamiliar text (Olshavsky, 1997). Moreover, perhaps an over-riding consideration, if not principle, as Brown and Rogers (2004, p.57) believe, is that the introspective tasks should be within the linguistic and cognitive capabilities of the participant subjects. This is particularly true when working with second language subjects. Some practice exchanges will indicate at what level of conceptual language participant subjects are competent.

Someren, Barnard and Sandberg (1994) considered that the experimenter should not *ask questions* during the problem-solving process or the subject may be prompted at given intervals to tell what he is thinking or doing and it may be interrupted. Prompts that require interpretation will also affect the problem-solving process (see for example Chi et al., 1989; Ferguson-Hessler & de Jong, 1990; van Someren & Elshout, 1985). These prompts can be very similar to those proposed by educational scientists to improve problem-solving performance and learning. During training no *feedback* should be given as well even if students expressed word difficulty, mispronounced or misread words, or asked questions. Interference should only occur when the subject stops talking.

Because of time restrictions it is usually possible to apply the think aloud method to only a rather small set of problems. The best way to handle this is probably to combine the think aloud method with less time-consuming techniques that make it possible to get a picture of the generality of the results that were obtained with the think aloud method. Additionally, Ericsson and Simon (1993) suggest the use of simple warm-up tasks in which it is comparatively easy to think aloud, for example, a simple arithmetic exercise.

During using the method, the researcher should decide what language the participants will be expected to use when doing their think aloud. On the one hand, some complication might arise from the think aloud procedure if subjects are told to read in L2 and talk in L1: " Requiring subjects to switch back and forth between languages while reading and verbalizing would seem to encourage translation…" (Rankin, 1998 pp. 122-3). On the other hand, there is a danger that participants will worry more about speaking out loud and concentrate less on the reading itself if they are required to verbalize in foreign language. This is why, in order "to avoid the problem of limited L2 production abilities" (Lee, 1986 p.204) and to avoid cognitive processes not in the focus of the study, subjects should be instructed to verbalize in their mother tongue. But in this study since the focus is on improving foreign language as well as comprehension, the students were asked to verbalize in the L2.

Brown and Rogers (2004, p.56) stated all researchers working in the think-aloud method emphasize the importance of recording-both audio and video where possible- participant responses for later analysis. In some class situations, having noise restricted, non-distractive areas within your study areas for tape recording may not be realistic expectations. A research by Lotz (1963) said that only 1% of the meaning in speech involves language. He identified rhythm, speech, pitch, intonation, timbre, and hesitation phenomena as the more important meaning bearers in speech. The importance of this non-verbal data is the principal reason why researchers use audio and video recordings where possible. This enables them to record pauses, changes of reporting speech, loudness or tone, what else the participant was doing during introspective speech (gestures, eye movement, body shifts, etc.). Such non-verbal data will be critical to your coding and analysis, and determine a method for transcribing such data. Coding of language data for language grammatical types, sound types, functional types have been proposed as well but none of these can be considered standard (p.62).

PRACTICAL PROCEDURES IN OBTAINING THINK-ALOUD PROTOCOLS

An alternative approach to think-aloud is *reciprocal think-aloud* in which students are paired with a partner. Student take turns thinking aloud as they read a difficult text, form a hypothesis in science, or compare opposing points of view in social studies. While the first student is thinking aloud, the second student listens and records what the first student says. Then students change roles so that each partner has a chance to think aloud and to observe the process. Next, students reflect on the process together, sharing the things they tried and discussing what worked well for them and what didn't. As they write about their findings, they can start a mutual learning log that they can refer back to (Available at teachervision website).

The beneficial effect of a follow-up on students' learning should not be overlooked in the think-aloud method. Through a *follow-up activity* the teacher needs to discuss the type of responses that are used most often. Ask students what they could do to increase comprehension of a particular text. Explain how students

can use the think-aloud technique to assess their comprehension of a text. Ask students what responses they could use to help them read their content area textbooks versus fictional literature. To complement the think-aloud protocols, Elekes (1998) employed two additional data collection methods; summary writing as evidence of comprehension of the texts; and semi-structured interviews to confirm the findings of the protocols, following Rankin's (1988) suggestion, "as an additional safeguard, it may be advisable to have subjects do a retrospective analysis of the research passage after the thinking aloud session" (p. 125).

Extension is another complementary procedure to the method that provides students with different types of texts to further explore and practice using think-alouds. Suggestions include short stories (fiction or nonfiction) and excerpts from content area texts. Students can work in either small groups or independently to read the selected text using the think-aloud strategy. Eventually, *student assessment/reflections* are also helpful. Develop a plan so that your students can not only assess their reading, but also so that they can set goals for themselves which allow them to grow as readers.

Wilhelm (2006) also confirms the magic impact of follow-up tasks and asserts that after students have done their think-alouds, ask them what they learned about doing the activity and have them compare it to having someone else talk them through the task. Have them share their thinking and the strategies with a partner. Ask students to describe how their think-alouds for reading are different, if at all, from their think-alouds when doing a task.

Richard T. and Vacca introduced other alternative Procedures for the think-aloud:

Making predictions - students make predictions by using the chapter title or subheadings found within the chapter.

Developing images - students get mental pictures of information found in the text.

Share analogies - students use analogies to link new information to prior knowledge.

Monitor comprehension - students think about their confusion over difficult information.

Regulate comprehension - students read beyond a confusing section to see if the information that comes next will clear up their confusion.

REVIEW OF LITERATURE

Someren, Barnard and Sandberg (1994) point out that the think aloud method has its roots in psychological research. It was developed from the older introspection method. Introspection is based on the idea that one can observe events that take place in consciousness, more or less as one can observe events in the outside world. Some early psychologists, for example Titchener (1929), went as far as to claim that the events in consciousness were the actual object of psychology in contrast to the outside

world which is the object of the natural sciences. In this view, psychologists study the type of events that take place in human consciousness and their causal structure just as other scientists study the events that occur in the outside world.

Introspection has led to some successful research but there were also fundamental theoretical and methodological problems attached to it. The theoretical problems concern the model of introspection as perception of the contents of consciousness. This model makes a separation between the processes in consciousness and the introspection process itself, thereby suggesting that the latter is not accessible in consciousness. On the other hand, if both are considered to be accessible in consciousness, a 'homunculus' problem is raised: is the introspection process itself subject to introspection? This question could not be answered satisfactorily within the framework of introspection as perception of consciousness. The solution that underlies the think-aloud method is to assume a simpler process (verbalization instead of observation and interpretation) and to assume that only the contents of working memory are verbalized instead of the entire cognitive process.

A methodological problem with more severe practical consequences is that in the introspection view the research data are the events that take place in consciousness. These are to be analyzed and explained. However, these data are fundamentally accessible only to a single observer, who also performs the thought process. This makes it impossible to replicate empirical studies and thereby to settle scientific discussions about thought processes. These discussions and the built-in limitation of the introspection method made psychologists turn away from the introspectionist method and associated theories. Because introspection was a central method in studying cognitive processes, this also meant that psychological research turned away from cognitive processes.

This contributed to the rise of behaviorism in the 1930s. Behaviorism took the other extreme view. It banned all theorizing about processes that cannot be observed from the outside of the body, as speculation, with the exception of physiological processes. The history of the introspection method in psychology has made psychologists suspicious of methods that resemble introspection. Note that we know now that this suspicion is not justified with respect to the

think-aloud method for two reasons:

• The think aloud method avoids interpretation by the subject and only assumes a very simple verbalization process.

• The think-aloud method treats the verbal protocols that are accessible to anyone, as data thus creating an objective method.

By the end of the 1960s the interest in internal cognitive processes grew very fast and thereby the interest in methods that can provide data about these

processes. A major result was the work by Newell & Simon (1972), who used think-aloud protocols in combination with computer models of problem solving processes to build very detailed models. Using this methodology Newell and Simon were able to explain protocol data from a theory of human memory and assumptions about the knowledge that subjects could bring to bear on a task. This work had a major influence, because it showed that very detailed explanations of verbal data can be obtained. Someren, Barnard and Sandberg (1994) confirmed that the coding scheme for the think-aloud protocols was adapted from the Self-Regulated Learning coding scheme developed by Azevedo and colleagues (Azevedo & Cromley, 2004; Azevedo, Cromley, & Seibert, 2004; Azevedo, Guthrie, & Seibert, 2004), modified based on previous think-aloud reading studies (Fehrenbach, 1991; Laing & Kamhi, 2002; McNamara, 2001; Neuman, 1990; Robertson, 1990; Zwaan & Brown, 1996), and codes that emerged from the pilot study.

Several scholars have theorized about why student think-aloud is effective at improving comprehension. One popular theory is that getting students to think aloud decreases their impulsiveness (Meichebaum & Asnarow, 1979). Rather than jumping to conclusion about text meaning or moving ahead in the text without having sufficiently understood what had already been read, think-aloud may lead to more thoughtful, strategic reading. A study conducted with third and forth-grade students provides some empirical support for this theory. The study conducted by Baumann, Seifert-Kessell, & Jones (1993) to determine the impact of think-aloud technique- through a series of quantitative assessments and in-depth, individual student interviews- on helping students learn to monitor their comprehension led to the conclusion that think-aloud instruction was highly effective in helping students acquire a broad range of strategies to enhance understanding of text and to deal with comprehension difficulties. Student comments suggested a thoughtful, strategic approach to reading through think-aloud as well (p. 186).

A comprehensive review of think-aloud studies in reading by Pressley and Afflerbach (1995) showed the enormous range of strategic activities used by readers in elementary school (e.g., Langer, 1986), middle school (e.g., Loxterman, Beck, & McKeown, 1994), high school (e.g., Olshavsky, 1976-77), and among college students and adults (e.g., Afflerbach, 1990). Readers in think-aloud studies show evidence of planning their reading activities, enacting numerous cognitive and metacognitive strategies, monitoring the efficacy of those strategies, adjusting strategies flexibly, reflecting on and reacting to what was read, and many other processes (Azevedo, Cromley, & Seibert, 2004).

Think-aloud studies have revealed reading processes of proficient readers that had not been identified by static measures, but they provide frequency data, which limits the statistical methods that may appropriately be used to analyze them. In addition, researchers have recently called for multi-method studies to triangulate data found in think-aloud protocols, questionnaire, and other measures (Graesser, Singer, & Trabasso, 1994; Long & Bourg, 1996; N. Perry, 2002; Whitney & Budd, 1996; Winne et al., 2002). When a study shows converging findings across multiple methods, this strengthens the conclusions of the study (Someren, Barnard and Sandberg, 1994).

Currently the think-aloud method is accepted as a useful method by a large part of the scientific community in psychology and it also has its place in the repertoire of education. Brown & Rogers investigated that (2004, p.60) two of the areas in which introspective studies have proved most fruitful have been in the investigation of the processes involved in reading comprehension and written composition. Several studies have shown that students who verbalize their reading strategies and thoughts while reading score significantly higher on comprehension tests (Oster, 2001). For example, Henry (2008)'s studies have shown that the think-aloud strategy improves reading comprehension on tests as well. Through this lesson, the teachers need to model the think-aloud strategy for students. Components of think-aloud will be introduced, as well as type of text interactions.

Furthermore, a classic study by Bereiter and Beck (1985, quoted by Duke and Pearson) showed that students who were asked to think aloud while reading had better comprehension and were better at summarizing information in a text (Silven and Vauras, 1992) than students who were not taught to think aloud.

Recently, Swain and Lapkin (quoted by Lantolf 2009, p.47-8) report on the consequences of using introspective (think-aloud) and retrospective procedures in a study with French immersion students. The students were asked to rewrite the original story in which they were to listen to as their instructor read to them at normal speed. The researchers conclude that the students' performance improved from the first to the second writing of passage that represent that the think-aloud and retrospection played a significant role in helping their notice things in their own writing. Leow and Morgan-Short (2004), on the other hand, in their study of low-level Spanish L2 classroom learners report no difference in performance on a reading comprehension task between think-aloud and non-think-aloud groups on any of the three tasks such as completing a series of brief comprehension, recognition and controlled writing tasks based on the task they have read (p.48). Other than these Ericsson and Simon have mentioned some of the areas in which introspective studies have been done and results found fruitful. Here is a list of some such areas: intake or controlled written production, solving logic/physics/mathematics problems, test-taking,

translating, interpreting poetry … (Brown & Rogers, 2004 p.70).

In this paper, however we will argue whether the think-aloud method will have a significant impact on the improvement of learners' reading comprehension by applying effective reading strategies. We will present data to support the assumption.

METHOD
SUBJECTS

32 upper-intermediate EFL male learners -of between 18 and 23- from Parsian English Institute in Tonekabon, Iran participated in the study. 32 out of 58 students were selected after a TOEFL reading comprehension test was applied; then those who answered about 20 to 30 out of 35 were selected and randomly divided into two groups: experimental and control groups, 16 students each group. The control group was trained in reading using traditional methods and the treatment group in think-aloud method and reading strategies. All students were tested before- homogenizing- and after the treatment- to determine the impact of think-aloud method.

They were trained and practiced think-aloud method as well as reading strategies in a 3-week course of English reading comprehension. The class met twice per week for a total of 3 weeks, with each class meeting lasting approximately 90 minutes every session 30 minutes using think-aloud along with strategy training and practice.

MATERIAL

The texts for practice were chosen from Barons' TOEFL. It was attempted to choose texts that students have little background knowledge and suit their level of proficiency, because they were to think aloud in L2. They were examined in a TOEFL reading comprehension test before and after a-6-session practice. Materials were similar for groups both in format of questions and its level of difficulty except the treatment for experimental group. Learners had 35 minutes to answer 30 multiple-choice questions.

PROCEDURE

The curriculum for this training group covers the basic theory and practice of the   think-aloud method as well as teacher modeling, practice and strategy training. All the sessions for the treatment group were held in the lab and one of the researchers observed the class during the project to ensure appropriate use of method by the students and teacher and take notes of students' strategies or their coding methods.

The session normally starts with introducing the method and warm-up exercises. As a warm-up, they were to carry out the steps of solving an arithmetic problem fully aloud and the observer was to record to transcribe what they are reporting aloud later. Another warm-up activity was anagram puzzles that the

instructor showed the students a card with scrambled letters. It is their task to find an English word that consists of all the presented letters. For example: <NPEPHA> (Ericsson & Simon, 1988) or having students choose a physical activity that they do often, such as tying their shoes, opening a door, or making tea. This can include a wide range of techniques and exercises aimed at creating group cohesion, a safe and containing atmosphere, and a focus for the session. The session continues by teacher modeling for about 15 minutes with one of the texts while students have a copy of this text in front of them. The texts preferably should be short and if it is long it is asked to do the method for some parts selected by the teacher. The teacher had the students take notes and make a list of the different types of things the teacher is doing to help them better understand the text. Then, he introduced the task to students by saying, "I want you to think aloud as you complete the task: say everything that is going on in your mind and specific strategies you use." It also needs to familiarize the students with the purpose of the study. By engaging poor readers in groups of two in guided practice in the think-aloud method during a session lasting approximately 30 minutes, we provide them with the opportunity and guidance they need to choose useful, appropriate strategies to enhance reading comprehension as well as pen and pencil to take note of strategies they use while reading. Strategy training also conducted during practice, consisted of using contextual cues (pictures), decoding skills (phonetic knowledge and syllabication), and text structure to help them understand what they were reading. We encourage them to think about why and when to use certain strategies and provide them with the tools they need to successfully monitor their own comprehension.

During the think aloud no feedback was given and none of the subjects used the dictionary. The reason is that they tried to employ another cognitive strategy which was to guess the meaning of a word from the context. As students complete the task, listen carefully and write down what students say. After finishing the reading, the instructions, passage, and any notes taken were removed, and students were asked to verbally recall information from the text, with the instruction, "Please tell me everything you can remember about what you just read." When they finished, participants were then prompted with the question, "Anything else?" If they added any more statements, they were prompted once more with the same prompt. After any further responses, the session was concluded. The verbal recalls took less than 5 minutes. As students think out loud through a problem-solving process the observer wrote what they say. This allows the researchers to know which strategies students use.

After the think-alouds, informally students were interviewed to clarify any confusion that might have arisen during the think-aloud. For example, "When you

were thinking aloud, you said . . . Can you explain what you meant?" Then the target data transcribed from the tape recordings and figure how to integrate any notes or transcriptions the researchers made at the time of data collection. After students are comfortable with the think-aloud process, we used the strategy as an assessment tool.

RESULT

Table a
Group Statistics of the study

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Reading	control	32	15.1875	1.60015	.28287
	Treatment	32	17.7813	1.32554	.23432

Table b
Independent Samples t-test of the Think-aloud Impact on Reading Comprehension

		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
Reading	Equal variances assumed	.653	.422	-7.061	62	.000	-2.59375	.36732	-3.32801	-1.85949
	Equal variances not assumed			-7.061	59.925	.000	-2.59375	.36732	-3.32852	-1.85898

As is seen in Table a, the mean score for the control and experimental group is about 15.18 and 17.78 respectively. The result indicates that the mean score of control group is significantly different from experimental group that result in the impact of treatment of the learners with the think-aloud method.

In Table b, the Independent Samples T-Test reveals that P value of 'Levene's test for Equality of Variance' is less than α level (0.05), then H0 that the variability of the two groups is equal can be rejected, implying that variances are equal. On the other hand, because P<0.05 → M1≠M2 The null hypothesis is rejected.

So, a t-test revealed a statistically reliable difference between the mean score of the control group that has (M=15.18, SD=1.60) and the treatment group that has (M=17.78, SD=1.32), t(59.92) =7.06, P=0.00, α =0.05; P< α.

Figure1. Mean Score Control/Treatment Group Diagram of the Study

Figure1, also, points that there is a significant difference between the mean score of control and experimental group, and after treatment students performed better that confirm the significant impact of the think-aloud method.

DISCUSSION

The think-aloud method plays a more significant role in learning receptive skills such as reading comprehension and individuals who use a cluster of strategies are always successful. Based on the statistical analyses, recordings and the observation, we can conclude the following. It was also shown in the data analysis P=0.000. According to this assumption, if we consider α=0.005, P<0.05. The think aloud protocols, the researchers believe, give a clear insight in how students reach the solution. The protocols show clearly how they solve the problem step by step. Based on the analysis of verbal data and observation in the study, good readers: use a set of strategies, activate prior knowledge, set a purpose for reading, decode text, make a personal connection to text, make predictions, visualize, monitor their understanding, summarize, self-questioning, using context, consider story structure and genre as well as sentence structures, etc. A study by Someren, Barnard and Sandberg (1994) confirmed the fact and said: "Major categories for the coding scheme are *background knowledge, inferencing, strategy use, vocabulary,* and *word reading*."

In the study, the two students given the same answer used a very different solving strategy. Students were able to apply their knowledge of vocabulary, rhyme, and story structure to texts and to verbalize the strategies that they were using (pausing, self-questioning, rereading, and using context). As it was observed, students can plan their reading, adjust strategies flexibly, monitor their comprehension, share the things, can set their own goals, they learn how to learn, and develop into reflective, independent readers after the study. By analyzing the results, the researchers can pinpoint the individual student's needs and provide appropriate instruction.

With enough modeling and coached practice, students will be on their way to becoming independent users of
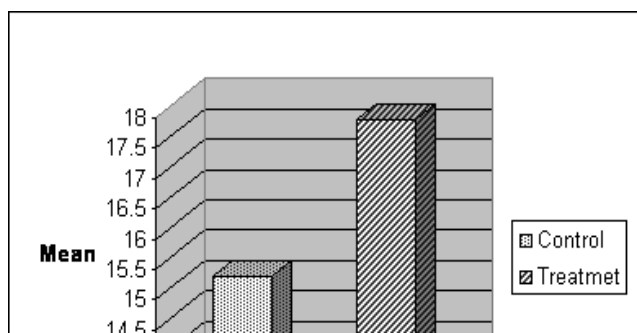
strategies. Eventually, they will become their own coaches and using the strategies will become more automatic for them, so that activities they have practiced will be happening automatically in their heads.

CONCLUSION

In the present paper, the researchers have considered a type of verbal report and the way it can be used in foreign language reading comprehension along with strategy training. The important factor about this method is that it helps get the cognitive processes of readers. Only the conscious processes are available for verbalization, that is, much of what is going on in readers' mind remains hidden. It will help to know how human brain works and by analyzing students' behavior, one can discover things about them, so he can reconsider his own reading habits, his expectations of students and the role of reading comprehension in language teaching.

The researchers have argued that this research method has the potential of becoming part of the language teacher's repertoire. By thinking aloud, teachers demonstrate effective comprehension strategies and, at least as importantly, when and when not to apply them. By using coached practice, and reflection, you can teach your students strategies to help them think while they read and build their comprehension.

PEDAGOGICAL IMPLICATIONS AND FURTHER RESEARCH

The think aloud method is one of the few techniques that gives direct data about the reasoning process. These are obviously areas of keen interest to language researchers and language teachers. These findings have implications for theories of reading comprehension, for future reading comprehension research, and for teachers, researchers and administrators who are responsible for educating undergraduate and postgraduate students. In studies on cognition, verbal protocols are used as raw data about cognitive processes. Such protocols require substantial interpretation and analysis to see their implications for process theories of problem-solving.

The think aloud method can be used to investigate differences in problem solving abilities between people, differences in difficulty between tasks, effects of instruction and other factors that have an effect on problem-solving. Some theories under investigation concern fairly detailed aspects of the processes involved in problem-solving. Their aim is to explain almost every step taken by the problem solver. Other theories employ more general properties of problem solving processes and use more global properties of people.

Consequently, for further research, think-aloud protocols are suggested as a good methodology in spite of being time-consuming and difficult to analyze since they allow the objective observation of both ongoing behavior and the mental pictures of the participants.

Therefore, it is an essential method for areas such as cognitive psychology, educational science and knowledge acquisition. Analyzing the protocols to obtain a model of the cognitive processes that take place during problem solving or to test the validity of a model is derived from a psychological theory.

In sum, it is necessary to design studies based on a model of mental processes, and to incorporate proper warm-up activities, careful task instruction and appropriate monitoring of participants' task performances in order to optimize opportunities for valid and reliable findings.

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