

SHARING THE READING SECRET: USING THINK-ALOUD TO IMPROVE READING COMPREHENSION OF L2 TEXTS

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Abstract

This study investigates the effects of thinking-aloud on L2 reading in relation with the type of task Iranian EFL readers engage in while reading activity. In so doing, 360 students were selected and assigned to experimental and comparison groups. The subjects in experimental groups were instructed to verbalize whatever they were thinking as their thought naturally came to mind while reading and doing the assigned tasks. The results indicated that the instructional procedure had contributed to the improvement of the EFL students' reading comprehension. By and large, the analysis of think-aloud protocol can provide language learners with a means for monitoring their reading process. Moreover, it gives an opportunity for language teachers to become more sensitized to various comprehension problems that students encounter and offers clues to understand potential weakness that students may have in their L2 reading.

Key words: *think-aloud, protocol analysis, retrospection, reading comprehension, language proficiency*

Introduction

Scrutinizing the literature minutely, we realize the fact that reading has been given scant consideration in Iran where English is not spoken, whereas the only accesses to the recent advances and latest information is simply through written texts which are mainly published in English. Ary (1996, p. 13) holds that the issue of teaching reading is one which has puzzled educational practitioners for many years. Some teachers still use the old traditional approaches to teach reading passages. Some other teachers, who are familiar with new developments in educational psychology, try to employ cognitive approaches and strategies in teaching this skill.

Protocol analysis or think-aloud have been frequently used as a means of observing language learners' cognitive processing and strategies as they perform various tasks. It has been popular in the field of cognitive science and psychology because the data obtained from protocol analysis allow researchers to observe, at some levels, the cognitive processes of subjects without influencing the sequencing of thoughts (Ericsson & Simon, 1998). In recent years, it has been actively

employed in the field of applied linguistic and educational research in order to investigate strategies learners use in first and second languages. The assumption that underlies protocol analysis is that researchers can infer learners' underlying thought processes by analyzing their verbalization. Think-aloud requires participants to tell researchers what they are thinking and doing while performing a task. The participants are usually instructed to keep thinking aloud, acting as if they are alone in the room speaking to themselves. Think-loud protocols are tape-and/or video-recorded and then transcribed for content analysis (Yoshida, 2008).

Cohen (1996, p.7) argues that think-aloud is a "stream-of-consciousness disclosure of thought processes". In the past three decades, the think-aloud procedure has increased in popularity among researchers as a data collection instrument in areas of research that espouse a cognitive perspective such as problem solving and second language learning (Faerch and Kasper, 1987; Ericsson and Simon, 1998). Extensive use of the said procedure in collecting verbal protocols is due to its ability to provide researchers with a 'window' to a hidden thought processes (Block, 1986; Crain et. al., 1997; Afflerback, 2000).

Such potential to reveal the thought processes, which is the power of think-aloud as a research method, is also an aspect of its potential as an instructional method (Kucan and Beck, 1997; Kamhi-Stein, 1998). The use of think-aloud as an instructional technique in reading comprehension evolved from research in observational learning and problem solving (Womack, 1997). As reading comprehension is also conceptualized as a problem solving activity that involves covert thinking processes, the use of think-aloud in making the hidden processes observable is particularly appealing as a teaching technique as well as learning technique (Olshavsky, 1977; Elekes, 1997).

Think-aloud can be categorized as retrospective or concurrent. In retrospective think-aloud participants are required, after performing a task to recall what they were thinking while they were involved in the process of completing that task. In concurrent think-alouds, on the other hand, they are asked to say aloud what they are thinking during the actual process of completing the task (Yoshida, 2008).

Ericsson and Simon (1998) also distinguish between reports that require subjects to verbalize their thoughts per se and those that require subjects to verbalize additional information such as non-mathematic verbalization potentially promote "dual processing" (i.e. engaging in a learning task and reporting their thoughts at the same time (cf. Ellis, 2001). One of the major benefits of think-aloud protocol is that there is no processing-reporting interval effects in think-aloud protocols, readers can report their thoughts while simultaneously being involved in the target task. Think-aloud protocols differ from retrospective verbalization,

such as interviews and retrospection in its use of concurrent verbalization. As verbal reports are collected upon completion of a task as learners are promoted to think back upon and report the processes and thoughts they went through in retrospection, there are naturally latency effects in what they remember, while think-aloud protocol elicits information most recently attended by learners (Alderson, 1990; Block, 1986; Kerren, 1994, Horiba, 2000).

Afflerback (2000) also pointed out, as benefit of methodology, that think-aloud protocol yields details descriptions of task -induced reader behavior and complexity in readers' thoughts and that it also permits the effect of affective states on reader-text interaction.

Recent studies seem to provide evidence for the usefulness of think-aloud as an instructional teaching and learning strategies, most notably collaborative strategic reading (Klingner, Vaughn and Schumm, 1993), transactional strategies instruction (Pressley, 2000), and reciprocal teaching (Palincsar and Brown, 1984). Besides that, the technique has been widely disseminated in reference books and reading instructional manuals as one of the suggested techniques in teaching reading (McEwan, 2004).

However, these studies were carried out in L1 reading setting. Though some of the empirical studies do involve multi-ethnic groups with some students speaking English as a second language, most of students involved were native speakers of English in as L1 environment. Whether the use of think-aloud by ESL/EFL setting will provide equally positive effects on reading comprehension remains unchanged. The purpose of this study, therefore, is to investigate the effects of thinking-aloud on L2 reading in relation with the type of task Iranian EFL readers engage in while reading activity. Correspondingly, answers to the following questions are sought:

1. Is there any significant difference between traditional strategies and think-aloud strategies in EFL learners reading comprehension performance when gender is concerned?
2. Is there any interaction between gender and method of teaching on the achievement of reading comprehension?
3. Is there any significant difference in the amount of comprehension of reading passages between elementary male/female readers when they employ think-aloud strategy?
4. Is there any significant difference in the amount of comprehension of reading passages between intermediate male/female readers when they employ think-aloud strategy?
5. Is there any significant difference in the amount of comprehension of reading passages between advance male/female readers when they employ think-aloud strategy?

6. Is there significant difference between advance male/female readers' answer when they are exposed to a questionnaire based on think-aloud strategy?

Method

Subjects

The subjects of this study were second semester (first year) bachelor in English major at Azad University, Ghaemshahr branch. 360 students were initially selected for the study and assigned to experimental and comparison groups. They were screened into three proficiency levels based on their performance on TOEFL test (Test of English as a Foreign Language). Grouping was done based on the dispersion of the TOEFL scores around the mean.

Instrumentation

The instruments of this research study were as follows:

1. The Nelson Standard Reading Test Version (c) ,1997 was applied as pre-test and post-test
2. A language proficiency test, TOEFL (Test of English as a Foreign Language, Sharp, 1989) was utilized to screen the subjects into three proficiency levels of low, intermediate, and high
3. Seventeen elementary reading passage, seventeen intermediate, and seventeen advance reading passages, were used. The level of difficulty of all reading passages was determined through Fox index model. On the other hand, these passages were all piloted on the subjects with similar characteristics in order to remove the malfunctioning points and stabilize the proper one.
4. On the basis of the model by (Baumann et.al., 1993; Jourdenais et.al., 1995) the think-aloud group in our study involved a variety of strategies that included asking questions, drawing on prior knowledge, assessing in comprehension by asking "Is this making sense?", predicting and verifying, inferring unstated ideas, retelling and rereading, and reading on to clarify meaning.
5. The researcher used a think-aloud based questionnaire entailing thirty closed form items on Likert scale involving five rating scales: always, often, sometimes, rarely, and never. The items were constructed based on Baumann et.al. (1993) and Jourdenais's et.al. (1995) recommendations on think-aloud strategies of reading comprehension.

Procedures

In order to determine if the think-aloud is an effective technique for helping students learn to monitor their comprehension, the subjects were screened into three proficiency levels based on the TOEFL test. Grouping was done based on the dispersion of the TOEFL score around the mean. The subjects were divided into low, intermediate and high groups. Each proficiency group was divided into think-aloud (experimental) group and non-think-aloud (comparison) group. Then, the Nelson Standard Reading Test Version (c), 1997 was administered as pre-test to probe the subjects' differences in their entry level and for determining the homogeneity of the group.

After designating twelve groups based on their determined levels, the researcher prepared 17 reading passages for the high-level readers, 17 reading passages for the medium-level readers, and 17 reading passages for the low-level readers through the Fox index model recommended by Farhady et.al.(1994).The experimental group went through two aspects of experimental treatment - a) training in think-aloud and b) reading lessons where think-aloud and class discussion were instrumental in the instruction given. Whereas those in the comparison group had the traditional approach for reading comprehension. The subjects in think-aloud group were instructed to verbalize whatever they were thinking as their thought naturally came to mind while reading and doing the assigned tasks. They were told to think-aloud during their reading either in Persian or combination of Persian and English. Students listened to a sample tape of a think-aloud task. It was important to explain to them that the purpose of listening to the sample tape was not to imitate it but to demonstrate what a think-aloud task would be like. Then they practice think-aloud while reading the passages. When they started a sample reading passage, they also start the tape recorder and never stop it until they finish the think-aloud task. These recorded verbalizations were transcribed and encoded for later analysis. The activities and procedures in the training session were taken from or adapt from procedures suggested by Baumann et.al. 1993 and Jourdenais et.al., 1995.

In the last phase of the study, the researcher distributed a think-aloud questionnaire to 60 male and female senior students - 30 male and 30 female- majoring in English translation at the Islamic Azad University of Ghaemshahr to illuminate the probable differences between these two sexes while answering these questions. To check the effectiveness of the think-aloud instruction, a post-test was administered to both group. Having the data collected the researcher processed the data using the statistical package for social science in order to provide answer to the research questions.

Results

Following an ANOVA test it was unraveled that subjects were homogeneous in terms of their language proficiency prior to the administration of the treatments. Next, a two-way ANOVA was run to investigate the effects of gender of the subjects, the teaching methods of reading and the interaction between these two variables on the performance of the subjects on the post-test.

Based on the results it could be concluded that there was not any significant difference between the female and male subjects' mean scores on the post-test. The mean scores for the female and male students were 69.31 and 67.65, respectively. Thus, the null-hypothesis as there is no significant effect of the gender of the subjects on their performance on the post-test was supported and it could be claimed that the gender variable did not have any significant effect on the performance of the subjects on the post-test.

Based on the F-observed value the null-hypothesis as there is no significant effect of the method of teaching on the performance of the subjects on the post-test was supported, and it could be claimed that the method of teaching did not have any significant effect on the performance of the subjects on the post-test.

However, the F-observed value for the interaction between the gender of the subjects and the teaching methods on the performance on the subjects on the post-test indicated that the traditional and think-aloud methods had significant effects on the performance of the female subjects only. The traditional method decreased the female subjects' performance, while the think-aloud method increased their performance. However the two methods were of almost equal importance for the male subjects. Thus, the null-hypothesis as there is no significant interaction between the gender of the subjects and the methods of teaching on their performance on the post-test was rejected, and it could be claimed that there was a significant between the two variables.

In addition, a two-way ANOVA was run to investigate the effects of the gender of the subjects, their proficiency level and the interaction between these two variables on the performance of the subjects on the post-test. Based on the gained results it could be concluded that there was a significant difference between the female and male subjects mean scores on the post-test. Thus, the null-hypothesis as there is no significant effect of the gender of the subjects on their performance on the post-test was rejected, and it could be claimed that the gender variable had a significant effect on the performance of the subjects on the post-test. The female subjects performed better than the male subjects on the post-test.

Accordingly, the null-hypothesis as there is no significant effect of the proficiency levels on the performance of the subjects on the post-test was supported and it could be claimed that the proficiency level did not

have any significant effect on the performance of the subjects on the post-test. The results also indicated that the gender of the subjects had a significant effect on their performance of the post-test only. The proficiency level did not have a significant effect and at all three proficiency levels the female subjects performed better than the male subjects. Hence, the null-hypothesis as there is no significant interaction between the gender of the subjects and their proficiency levels on the post-test was supported, and it could be claimed that there was not ant significant interaction between the two variables.

The last phase of this study dealt with the qualitative investigation. In this phase the researcher used a questionnaire to elicit the required data. The analytical procedures appear hereunder.

Table1: Distribution of choices made by Female and Male subjects
GENDER CHOICES DISTRIBUTION

			Choices					Total
			Never	seldom	sometimes	often	always	
Gen der	male	Count	19	92	178	266	349	904
		% within Gender	2.1‰	10.2 ‰	19.7 ‰	29.4 ‰	38.6 ‰	100.0 ‰
	fem ale	Count	89	156	222	241	191	899
		% within Gender	9.9‰	17.4 ‰	24.7 ‰	26.8 ‰	21.2 ‰	100.0 ‰
Total	Count	108	248	400	507	540	1803	
	% within Gender	6.0‰	13.8 ‰	22.2 ‰	28.1 ‰	30.0 ‰	100.0 ‰	

Thus, the null-hypothesis as there is no meaningful relationship between the gender of the subjects and the answers given to the questionnaire was rejected, and it could be concluded that male and female subjects had answered the items on the questionnaire differently.

Discussion and conclusion

Results of statistical analysis pointed to statistically significant differences between the performance of reading comprehension measures of experimental and comparison group. In other words, the experimental group outperformed the comparison group on reading measures. Hence, the instructional procedure had contributed to the improvement of EFL students' reading comprehension. This finding support the use of think-aloud in reading instruction as advocated by

researchers like Nist and Kirby (1989), Oster (2001), and Yoshida (2008). Additionally, it corroborates the findings from empirical studies, e.g. Baumann, Jones, and Seifert-Kessel (1993), Bereiter and Bird (1985), and Thurmand (1986) that examined the effect of think-aloud on reading comprehension in general and reading strategies in particular.

In addition, the prominent pedagogical implications in this research correspond with what Woods (1996) believes in. Wood (1996, p.76) is postulated that guidelines for good practice in schools should not focus on discriminating between boys and girls, i.e. offering actual as well as formal equability of opportunity. Accordingly, the problem of equity towards different genders and their specific thinking abilities have remarkably been ignored the prevalent educational curriculums. The bias and unfairness toward one genders has contaminated the teaching materials. So the experience of analyzing students' think-aloud protocols may give an opportunity for language teachers to become more sensitized to various comprehension problems that students encounter and offer clues to understand potential weakness that students may have in their L2 reading.

Also, as far as teaching methods and assessments are concerned most of teachers and Language practitioners still resort to traditional strategies of teaching passages for reading comprehension. By virtue of the acquired results in this study and the researchers' class observations, educational authorities are required to train language instructors so that they might be to avail themselves of thinking strategies in their reading comprehension classes. Moreover, regarding language teaching and assessment the gender of learners is usually neglected in language textbooks and classroom environments. The authorities of language teaching and learning are required to incorporate certain methodologies according to the gender of learners to facilitate the development of language teaching and learning.

By and large, the findings suggest that using think-aloud works well for helping students develop an ability to monitor their reading comprehension and to employ fix-up strategies when they detect comprehension difficulties. Although there are some limitations of the protocol analysis as a method, think-aloud protocols offer potentially valuable source of information about L2 reading to researchers. In the future, further research will be needed in order to investigate validity and reliability of think-aloud protocols in L2 reading research.

References

- Afflerbach, P. (2000). Verbal report and protocol analysis. In Kamil, M., Mosenthal, P., Pearson, D., & Barr, R. (Eds.). *Handbook of Reading Research*. Volume III (pp. 163-179). Hillsdale, NJ: Lawrence Erlbaum Associate

- Alderson, J.C. (1990). Testing reading comprehension skills (part one). *Reading in a foreign Language*, 6(2),425-438.
- Ary, D. (1996). *Introduction to research in Education*. New Jersey: Holt, Rinehart and Winston Inc.
- Baumann, F.J., Jones, L.A., & Kessell, N.S. (1993). Monitoring reading comprehension by think Aloud. NRRC: National reading research center university of Georgia and Maryland.
- Block, E. (1986). The comprehension strategies of second language readers. *TESOL Quarterly*, 20,463-494.
- Cohen, A.D. (1996). Verbal reports as a source of insights into second language learner strategies *Applied language learning*, 7 (1&2),5-24.
- Crain, C., Lippman, M.Z. & McClendon-Magnuson, D. (1997). Windows on comprehension: Reading comprehension processes as revealed by two think-aloud procedures. *Journal Of Educational psychology*, 89(4), 579-591.
- Elekes, K. (1997). "Please keep talking". The think-aloud method in second language reading: Reading research. Novelty,7: <http://www.novelty.hu/htm2/vol73/elekes.html>
- Ellis, N. (2001). Investigating form-focused instruction. *Language learning*,51,1-46.
- Ericsson, K.A., & Simon, H.A. (1998). *Protocol analysis: Verbal reports as data*. Boston: MIT Press.
- Faerch, C., & Kasper, G. (1987). *Introspection in second language research*. Clevedon: Multilingual Matters.
- Farhady, H. 7 Jafarpoor, H. & Birjandi, P. (1994). *Language skills testing from theory to Practice*. Tehran SAMT publication
- Kamhi-Stein, L.D. (1998). Profiles of underprepared second language readers, *Journal of dolescent and Adult Litracry*. 41(8),610-619.
- Kerren, R.G. (1994). The role of mental translation in second language reading. *Studies in Second language acquisition*, 16-441-461.
- Klingner, J.K., Vaughn, S., & Schumn, J.S. (1998). Colloborative strategic reading during social: Social studies in hetrogenious 4th grade classroom. *The elementary school Journal*, 99 (1), 3-22.
- Kucan, L. & Beck, L. (1997). Thinking -aloud and reading comprehension research: Inquiry Instruction , and social interaction. *Review of Educational Research*, 76,271-299.
- Horiba, Y. (2000). Reader control in reading: Effects of language competence, type text And task. *Discourse processes*, 29 (3),223-267.
- Jourdenais, R., Ota, M. Stauffer, S., Boyson, B., & Doughty, C. (1995). Does textual Enhancement promote noticing? A think-aloud protocol analysis. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning and teaching* (pp.188-216). Honolulu: National foreign language resource center.

- McEwan, E.K. (2004). *Seven strategies of highly effective readers: Using cognitive research to Boost K-8 achievement*. Thousand oaks: Corwin Press
- Olshavsky, J.E. (1977). Reading as problem solving: An investigation of strategies. *Reading Research Journal*, 7(4), 654-674.
- Palinscar, A.S. & Brown, A.L. (1984). Reciprocal teaching of comprehension fostering and Comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117-175.
- Pressley, M. (2000). What should comprehension instruction be the instruction of? *Hand book of reading research volume III (pp.163-179)* Hillsdale, NJ: Lawrence Erlbaum
- Sharp, P.J. (1989). *Barron's TOEFL*. New York: Barron's Educational Series, Inc.
- Womack, R.J. (1997). *The effect of think-aloud on students ability to identify main ideas in Reading passages*. Unpublished ED Dissertation: University of Maryland College park.
- Yoshida, M. (2008). Think-aloud protocols and type of reading task: The issue of Reactivity in L2 Reading Research. *Selected proceedings of the second language research Forum*. Ed. Melissa Bowles et.al.