

## SELF-PACED READING AND THE ACHIEVEMENT OF PERSIAN EFL LEARNERS

Amir Toghyani Khorasgani

Islamic Azad University-Khorasgan branch in Esfahan, Iran

E-mail: toghyaniomid@yahoo.com

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**Abstract:** This study aimed at investigating the effects of reading goals on L2 reading comprehension in a computer-mediated environment when reading is self-paced by the learners and students are responsible for their own comprehension. Sixty participants (30 males & 30 females) in three groups of 20 were involved. A computer program, written in C#.NET program, presented the text on the screen four lines at a time, and measured the amount of time students would spend on each page initially, how many times students re-read pages, and how much time students would spend re-reading pages. L2 learners' comprehension and learning strategies were measured in three ways: recall of materials, time spent reading each page of the text and time spent re-reading pages, and the number of times pages were re-read. Finally, after one month from the first test a posttest was administered to determine which group could remember materials better. The results revealed that recall of materials was significantly greater for the teaching-goal group than the other two groups in both first and second tests. Time spent re-reading was significantly greater for the teaching-goal group as well. These findings suggest that reading goals do have an effect on comprehension and recalling in a computer-mediated environment and students with a different reading goal performed differently while reading passages.

**Keywords:** *reading goals, computer-mediated reading environment, learning, immediate and delayed recall.*

### INTRODUCTION

Reasons for learning a second language (L2) vary widely from person to person. Some people may learn an L2 for the pure intrinsic enjoyment that comes with learning a new language while others may learn an L2 in order to obtain the extrinsic reward of a better salary (Noels et al., 2000). Reader reads a text to understand its meaning, as well as to put that understanding to use. A person may read a text to learn, to find out information, to be entertained, to reflect or to practice religious issues. The reasons of reading will also affect the way a book is read. We read a dictionary in a different way from the way we read a novel. In the classroom, teachers need to be aware of their students' learning needs, including their goals for reading (Surber, 1992).

As students move beyond the primary grades, the focus of their school lives shifts from learning how to read to using reading to learn. From the middle grades on, students are expected to read and to understand increasingly more difficult materials in an array of content areas. Unfortunately, many students are unable to meet this expectation. For them, reading to learn from content area materials can be a struggle (Biemiller, 1999).

In the area of reading research, researchers have almost always been preoccupied with the question of how reading can be taught and learned in the best way possible. Teachers always want to teach a reading passage in a way that it is best learned and remembered by students for a long time (Duffy 2002; Palinscar & Brown 1984). Most teachers

want to reduce the burden of teaching passages and make students responsible for their learning, so students should make a decision whether or not they understand the text, or whether they need to read and practice on the text more. Students should also use the best reading strategies in relation to their aims. Hall (2001) stated that learning strategies are goal-directed actions used by learners to mediate their own learning. Since the goal of most types of readings is comprehension, it is important for students to make decision about whether or not they comprehend the passages they are reading. If a student decides s/he does not comprehend the passages, s/he must use some strategies to solve this problem by adjusting studying patterns accordingly.

In current trend of education, especially in distance learning, most students have to use computers and computer programs in their learning in order to be motivated to learn by themselves. Motivated learners are able to set goals for themselves within a time frame. If they recognize that they do not have sufficient knowledge of a subject or the language, they may change their learning strategies according to their goals to match the time available (Hall, 2001). The number of e-books, glossaries, and dictionaries which can be used in computer-mediated environments is rapidly increasing and students need to be familiar with these technologies and the way they are used. The use of these technologies makes it possible for all learners to learn twenty-four hour a day and any where if they want to, in other words, whenever they wish to learn.

Although students with different goals use different strategies, what is the best goal for reading comprehension in a computer-mediated environment? Reading from the monitor would enable the researchers to pursue learning strategies and clarify their effects on

reading comprehension and learning. As Bialystok (1991: 71) stated, "language learning strategies are optional means for exploiting available information to improve competence in a second language". There are few number of studies in relation to the effect of reading goals on the ultimate achievement of EFL learners, the problem of which goal has more effect on reading comprehension and learning and the combination of these two areas with the vast effects of new technologies (computer programs) on the ways of presenting and learning new materials in circumstances that teacher is not easily available for students, and students should take the responsibility of their learning and comprehending the passages they read.

The study pattern used in this research is the one suggested by Garner and Reis (1993), who found that good comprehenders consistently recognize comprehension problems and use "look-back" strategies to solve them (looking back in the text when a student realizes s/he needs more information from preceding pages). For reading behavior in this study the time for reading the whole text was calculated; this way of measuring is supported by three previous studies: the work of Monty and Senders (1983) who reported measuring the speed of word and letter identification; the work of Rayner and Pollatsek (1987) who took an interdisciplinary approach to timed reading research which included eye-tracking studies, as well as a cognitive-anatomical approach to studying word recognition; and finally the work of Just and Carpenter (1992) on eye fixations who suggest that longer eye fixations occur when readers are confronted with uncommon words, while they are integrating information from important clauses in the text, and while making inferences at the end of sentences. Although the scope of the present study

does not specifically include the detail of eye fixation, longer reading times might suggest differences in reading behavior.

Despite the fact that models and guidelines recommending pedagogically sound practices for incorporating computer-based materials exist (Berry 2000; Brandl 2002; Chun & Plass 2000), a major concern is that the number of such examples remains limited. A common theme in such studies is the benefit of learners from facilities offering support and assistance in computer learning environments, such as electronic dictionaries, glosses, graphics, and E-books.

One of the new trends of education is related to distance learning in which teachers are not available for students most of the time and learning is self-paced. Oxford (1990) stated that learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations.

The concept of reading goal was discussed in literature review, but few publications have so far explored the effect of reading goals on learning in a computer environment. As Hall (2001) mentioned, "students use some learning strategies for their reading and their learning strategies are directly related to their goal". This idea emphasizes this fact that having different reading goals in mind would lead to using different learning strategies. Thus, this research aimed at investigating the effect of reading goals on the students' comprehension and recall of the materials to determine the most effective type of reading goal.

## METHOD

For this study the researcher made use of convenience sampling technique to select the EFL learners studying English at Ahlol-Beyt Language Institute in Isfahan. Wallen &

Fraenkel (2001: 137) define convenience sample as "a group of individuals who (conveniently) are available for the study." There were 60 participants (30 males & 30 females) and their ages ranged from 17 to 26. All participants were selected from term 12 and 13 (30 students from each term). They were equally distributed to each group of study according to their level of study and their gender to reduce the effect of participants' proficiency levels and genders. Then they were divided into three groups, 20 each, and each group was assigned a specific goal. In other words, one group was to know the passages, another group was to take a test about the passages, and the other group was to be able to teach the passages. These students were granted extra credit points as an incentive for participating in the study. For entering each of these terms all students had to take the proficiency test of the English Institute, so all of the participants were homogenized as much as possible.

The reading task (2000-word) included two different passages, namely, 'How to cope with insomnia' and 'How to read body language'. By the use of two different topics for reading task the effect of background knowledge and familiarity with reading topics tried to be reduced. The criteria for choosing the texts were what Nuttall (1996) offered: 1) suitability of content: interesting and enjoyable materials, 2) exploitability: a text that facilitates the achievement of certain language and content goals, 3) readability: a text with lexical and structural difficulty that will challenge students without overwhelming them, and 4) stimulating topic which increase curiosity of students to read the materials. The reading task was presented in the computer lab on computer monitors. Reading from the monitor would enhance the ability to log reading time per page, re-reading time

per page, and the number of visits per page. The text was presented in four-line 'pages' on a computer screen. Reading was self-paced and readers were allowed to scroll forward and backward through the text. The computer program recorded the total amount of time spent on each page (read plus re-read) and total amount of time for reading the whole text. Additionally, students were not allowed to take notes to remove the effect of note-taking ability (some of the participants might be familiar with the ways of taking notes meanwhile others may be weak in this part, and this variable could have affected the results of this study).

The recall task consisted of a sheet of paper with 20 multiple-choice items and some instructions at the top. Students had to write their goal of study at the related box. Participants were asked to select the appropriate answer for each question. The reason for using the multiple-choice questions was due to varying students' ability in essay type questions and to reduce the irrelevant variable effects (some students might be weaker than others in writing and it might affect the study results) and the ease and precise scoring. The whole question sheet included ten questions for each text (both main ideas and detail questions) so each student was to answer all twenty questions. The same procedures were followed after one month with the exception of reading passage (there weren't any passages in the second exam). For the sake of having the same conditions, participants were not allowed to use any notes taken during the reading session of this study to assist with recall. It should be mentioned that the questions for this study were adapted from the mentioned book and as it was claimed on its back cover it tested by native and nonnative speakers of English, but for the purpose of this study the researcher again tested


them in a pilot study with 15 students and its validity was confirmed by the experts and its reliability: 0.93 was calculated by using KR-21 formula.

The questionnaire only collected demographic information for each of the participants. Questions included: their name, gender, age, their level of studying in the institute, and their reading goals. The text was presented to subjects by means of a computer program written in *C#.Net*. The program read the passage from the text file and presented the text on the screen in four-line page segments. Subjects were able to move backward and forward through the passage by clicking on the navigation arrows on screen ('Previous' key for moving backward and 'Next' key for moving forward). In this manner, the participants could easily re-read previous passages if they wished, and the program saved their number of readings each page. The program recorded how much time the subjects spent on each four-line page for the first time reading and also a cumulative total of any re-reading time. All data from each participant were saved as a separate file.

First of all, a pilot study was done with 15 students (7 females & 8 males). They were divided into three groups of 5 with three different reading goals (reading to teach, reading to know, and reading to take a test) like the main participants of this study. In the first step, they participated in a short warm-up section in order to become familiar with the presentation of text and the functions of the keys. Then, they started to read the passages on monitor screen by using the same computer program as the one for the main participants. Finally after distracter task, they answered the questions. The aim of this pilot study was to ensure the effectiveness of the computer program in recording each participant's data and other facilities. The validity of questions



and answers had already been confirmed by authorities, but again in the pilot study it was tested by asking students if the questions were related to the passages and if they were satisfied with the choices or not. Fortunately, there was no need for editing and revising the questions, their choices, and the length of passages. The participants for this section were selected from the same level of proficiency but in a different branch of language institute. The only difference between the pilot study and the main study was the number of exams; there was only one (immediate recall) exam for the pilot study.

For the main study, 60 participants were selected from terms 12 and 13. They were divided into three groups, 20 each, and each group was assigned a specific goal and separated from each other according to it. Finally, each participant sat in front of one computer in the computer lab. Participants were given a short online warm-up passage to read in order for them to become familiar with the presentation of text and the functions of the keys. Only two navigation keys were displayed for the participants; one symbol (Next) to advance to the next screen of text, and one symbol (Previous) to go back to the previous screen. Participants were asked to practice using the symbols and were helped until they felt comfortable. A third symbol () was available to terminate the study. Participants were told that they could terminate the study at any time. Then, the participants were told that they would be reading the passages on the computer screen. Each student was given the instruction sheet which provided the reading goal (to understand the passage, or to take a test about the passage, or to be able to teach the passage). After that they were asked to read the passage from the screen at their own pace. Specifically, one group was told

to read the passages to understand. A second group was told to read the same materials in order to be prepared for taking test. A third group was told to read the same materials in order to teach. All questions were multiple-choice items and were answered by the researcher in advance.

The passage for this study had 40 pages when presented four lines at a time. In previous studies, when text was presented on a computer, the page size varied from single words at a time (for very short passages less than one print page) to entire screens. The argument has been made (Surber, 1992, 1994) that any unit size is to some extent arbitrary (book pages often end in mid-sentence). The decision of page length in this context became a matter of timing: many short pages would allow for fine-grained reading times; while a smaller number of pages would contain more text with less fine-grained reading times. Four-line pages are short enough to provide a better measure of reading time, and also the time for reading is logical. This particular configuration has been used effectively in a number of previous studies (Schoeller & Surber, 2003; Surber, 1992, 1994). Finally, after one month, students took part in another test, but this time there was no reading part and they had to remember what they had read before.

Four sets of data were scored: (1) the recall task in which the participants were asked to recall the materials and select the correct answers for studied topics in the first test; (2) read and re-read times, measuring how much time was spent reading a page the first time, and any time spent re-reading the pages; (3) number of times pages were re-read; and (4) the recall task in which participants were asked to recall the materials for the topics in the second test. To reduce any errors in scoring, each answer sheet was scored twice by the

researcher (intra rater reliability). As a result, each participant received one set of scores for recalling materials in each exam.

To score the recall task, each of the selected responses was scored with a procedure already developed for the pilot study and was used in similar researches (Schoeller & Surber, 2003; Surber, 2001). The passage was about two different topics- *How to Cope with Insomnia*, and *How to Read Body Language*- to reduce the effect of other unrelated factors and variables. The intent of measuring recall is to investigate what the individual has learned. If learning is the ability to organize information into a schema, recall of both the main ideas and supporting details is important. For this reason in this study, the question included both main ideas and supportive details. There were ten questions for each passage. Recall and selection of answers for these ten questions were scored by using a 0, 1 scale. A '0' was given if the subject was not able to identify the answer and left it blank on the answer sheet or selected the wrong answer; a '1' was given if the subject could clearly identify and select the correct answer. A total of 10 points were possible for the correct recall and selection of all ten answers. A total of 20 points was possible for the correct recall of materials and selecting the correct answers for both passages.

The raw time was computed (in milliseconds) by the computer program and was saved by the computer program in separate files for each participant. Students learned how to go to the next and previous texts on computer screen in the warm-up section, and after that students read the instructions which indicated the reading goal. Finally, all times were converted to seconds for the clarity of presentation. There were two features in this part which might

have affected the validity. First, it was considered that many participants might fail to follow instructions they had at warm-up section for the first page, and the computed time of that page may be irrelevant to the goals of this study. Additionally, when the participants finished reading the text, they might have neglected to advance the screen for the last time to the end (although there was on-screen prompt to do so), so the timer would not stop. These extra amounts of time of the first and the last page did not deal with the students' learning and decreased the validity of the test. So for the sake of confidence and valid results, the first and the last page of the passage were left blank and data from these two pages were not included in the results of this study.

The computer program automatically kept a count of the number of times each page was reread. These re-reads were summed for each individual.

Table 3.1 presents the final data set including the scores for each participant.

**Table 3.1.**  
**Final scores for each participant**

1)	Recall of materials (range = 0 -20), in the first test
2)	Total time of reading and re-reading each page
3)	Total number of pages re-read
4)	Recall of materials (range = 0-20), in the second test

## RESULTS AND DISCUSSION

### *Data Analysis for the First Hypothesis*

The first hypothesis related to the immediate posttest and stated that, "different reading goals do not have any significant effect on subsequent immediate-recall of the materials". Having completed the experiment, the researcher administered the immediate posttest and collected the data regarding this test. Then the necessary calculations

were employed to test the validity of the first hypothesis. Table 4.1 indicates the descriptive statistics for this test.

Table 4.1 tells us that the means of the three groups are different, but it doesn't tell us whether the differences are statistically significant or not. To find out about this, a one-way ANOVA was run. Table 4.2 presents the results of this ANOVA.

By looking at Table 4.2, one can easily understand that amount of F-observed is significant (F-observed = 13.932,  $p < .000$ ). In order to find out the exact place(s) of difference(s), an LSD post hoc test was employed. Table 4.3 depicts the results of this test.

According to Table 4.3, the following conclusions can be drawn:

1. Group reading to teach outperforms the other two groups, that is, group

reading to know and group reading to take a test.

2. Groups reading to know and reading to take a test performs statistically similarly on the immediate posttest; in other words, there is no statistically significant difference between these two group, although the mean of group reading to know is higher than that of group reading to take a test.

Therefore, the first hypothesis can safely be rejected, and it can be claimed that reading goals do have effects on reading performances of the learners.

*Data Analysis for the Second Hypothesis*

Table 4.4 shows the descriptive statistics for this posttest.

Table 4.1. Descriptive Statistics for the Immediate Posttest

Group	No.	Minimum	Maximum	Mean	SD
Reading to teach	20	16	20	18.20	1.281
Reading to know	20	11	19	15.55	2.235
Reading to take a test	20	10	19	14.55	2.946

Table 4.2. The Results of the One-way ANOVA for the Immediate Posttest

Source	SS	df	MS	F	Sig.
Between Groups	142.300	2	71.150	13.932	.000
Within Groups	291.100	57	5.107		
Total	433.400	59			

Table 4.3. The Results of the LSD Post hoc Test for the Immediate Posttest

Group	Group	Mean Difference	Sig.
reading to teach	reading to know	2.65*	.000
	reading to take a test	3.65*	.000
reading to know	reading to teach	-2.65*	.000
	reading to take a test	1.00	.167
reading to take a test	reading to teach	-3.65*	.000
	reading to know	1.00	.167

\*. The mean difference is significant at the 0.05 level.

Table 4.4. Descriptive Statistics for the Delayed Posttest

Group	No.	Minimum	Maximum	Mean	SD
Reading to teach	20	14	19	17.20	1.361
Reading to know	20	7	16	11.85	2.519
Reading to take a test	20	6	17	10.40	3.102

It can easily be seen in the above table that the means of the three groups under investigation are different. Another one-way ANOVA was used to understand whether or not the differences are statistically significant. Table 4.5 gives us this information.

By checking Table 4.5, one can see that the amount of F-observed is significant (F-observed= 43.194,  $p < .000$ ). Once again to find out the exact place(s) of difference(s), another LSD post hoc test was run. Table 4.6 is devoted to the results of this test.

By examining Table 4.6, it can be said that in the delayed posttest, too, the group reading to teach outperformed the other two groups- that is, reading to know and reading to take a test- but

the other two groups did not have any statistically significant difference in their performances. Therefore, the second hypothesis also can safely be rejected.

*Data Analysis for the Third Hypothesis*

Table 4.7 below shows the descriptive statistics for the amount of time spent on reading and re-reading by each group.

The above table, too, shows differences among the means of all three groups, but it does not tell us if the differences are significant or not. To do so, a third one-way ANOVA was applied to the results. Table 4.8 indicates the results of this ANOVA.

One can easily find out by checking the amount of F-observed

Table 4.5. The Results of the One-way ANOVA for the Delayed Posttest

Source	SS	df	MS	F	Sig.
Between Groups	513.100	2	256.550	43.194	.000
Within Groups	338.550	57	5.939		
Total	851.650	59			

Table 4.6. The Results of the LSD Post hoc Test for the Delayed Posttest

Group	Group	Mean Difference	Sig.
reading to teach	reading to know	5.35*	.000
	reading to take a test	6.80*	.000
reading to know	reading to teach	-5.35*	.000
	reading to take a test	1.45	.65
reading to take a test	reading to teach	-6.80*	.000
	reading to know	-1.45	.65

\*. The mean difference is significant at the 0.05 level.

Table 4.7. Descriptive Statistics regarding the Time Spent Reading and Re-reading

Group	No.	Minimum	Maximum	Mean	SD
Reading to teach	20	70.02	75.08	73.07	1.51558
Reading to know	20	47.22	49.28	48.34	.63438
Reading to take a test	20	43.95	46.45	44.89	.66117

Table 4.8. The Results of the One-way ANOVA for the Time Spent Reading and Re-reading

Source	SS	df	MS	F	Sig.
Between Groups	9451.403	2	4725.702	4519.962	.000
Within Groups	59.595	57	1.046		
Total	9510.998	59			



( $F_{\text{observed}} = 4519.962$ ,  $p < .000$ ) that the differences among the three means are statistically significant, but another post hoc test was needed to determine the exact place(s) of difference(s). Table 4.9 gives us this information.

The following conclusions can be reached at by considering Table 4.9:

1. Group reading to teach outperforms the other two groups, that is, group reading to know and group reading to take a test.
2. Groups reading to know outperforms group reading to take a test

Therefore, the third hypothesis can also be rejected, and it can be claimed that reading goals do have effects on the amount of time spent on reading and re-reading the texts by the learners.

*Data Analysis for the Fourth Hypothesis*

A computer software was implemented to measure the number

of times each page was read. Table 4.10 presents the descriptive statistics for this measurement.

The table indicates mean differences among the three groups involved in this study. A fourth one-way ANOVA was needed to determine whether or not these differences are meaningful. Table 4.11 is devoted the results of this ANOVA.

The results of this last ANOVA also shows a significant amount of  $F_{\text{observed}}$  ( $F_{\text{observed}} = 107.450$ ,  $p < .000$ ). In other words, the three groups performed differently with regard to the number of times each page was read. Here once again, it is necessary to find out about the exact place(s) of difference(s); therefore still another LSD post hoc test was used. Table 4.12 indicates the results of this test.

According to Table 4.12, the results here are exactly the same as those of the first hypothesis; That is,

Table 4.10. Descriptive Statistics for the Number of Times Each Page Was Read

Group	No.	Minimum	Maximum	Mean	SD
Reading to teach	20	2.11	4.01	3.01	.40099
Reading to know	20	1.23	2.09	1.73	.24624
Reading to take a test	20	1.17	2.11	1.69	.30529

Table 4.11. The Results of the One-way ANOVA for the Number of Times Each Page Was Read

Source	SS	df	MS	F	Sig.
Between Groups	22.538	2	11.269	107.450	.000
Within Groups	5.978	57	.105		
Total	28.516	59			

Table 4.12. The Results of the LSD Post hoc Test for the Number of Times Each Page Was Read

Group	Group	Mean Difference	Sig.
reading to teach	reading to know	1.28*	.000
	reading to take a test	1.32*	.000
reading to know	reading to teach	-1.28*	.000
	reading to take a test	.04	.648
reading to take a test	reading to teach	-1.32*	.000
	reading to know	-.04	.648

\*. The mean difference is significant at the 0.05 level.

the number of time each page was read by group reading to teach is more than those of the other two groups. However, the other two groups, that is, reading to know and reading to take a test, did not have any significant difference in this respect. Therefore, the fourth hypothesis is rejected, too, and it can be said that the goal of reading influences the number of times a passage is read. The next chapter presents the discussion of the results in detail.

In summary, regarding to the immediate recall tests according to the statistics the students with knowing goal and testing goal act statistically the same and students with teaching goal outperform other two groups. For the delay recall tests, students with teaching goal outperform other two groups and the other two groups (students with knowing goal and testing goal) do not have any statistically significant difference in their performances. Regarding to the amount of spending time on reading and rereading assigned passages all three groups acted differently, group reading to teach outperforms the other two groups and groups reading to know outperformed group reading to take a test. Finally, regarding to the number of time each page was read and reread by each group data analysis proves that reading to teach group rereads more than those of the other two groups and other two groups (reading to know and reading to take a test) do not have any significant difference in this respect.

## CONCLUSION

One of the problems currently facing language teachers is the problem of specifying factors to improve learning and direct students toward self reading and self study. The findings of this article suggest using of different goals to motivate students for achieving pre-established instruction aims, as

Covington (2000) introduced goal setting as part of motivational tools in the article *Goal Theory, Motivation, and School Achievement*.

This study used a new program to study students' reading behaviors and comprehension with different reading goals in mind. For each student this program saved his/her reading behaviors (amount of time spent on passages and the number of times reading and re-reading each page) in a separate file. Regarding the immediate recall tests, it should be mentioned that the students with knowing goal and testing goal acted the same. This finding is consistent with that of another study in which the students tended to expect to be tested in experiments (Orne 1962).

Therefore, the goal reading to test and reading to know may have essentially the same goals for those participants so the failure to find a difference between testing goal and the knowing goal is not a serious mystery. Thus, of the three reading goal groups participated in this study, the teaching goal group did significantly better in recalling materials than the testing and knowing goal groups. This study also proved the amount of forgetting for students with the teaching goal is the least among all three groups, since they could remember more materials than other two groups could. In this study participants were responsible for their own learning since they had the opportunity to go back and forth through the passages and decided whether they learnt them or not. So this study reduced the burden of teaching on teachers and made the learners responsible for their study; it is toward the distance-learning trend instruction in which teachers are not available most of the time.

This study reduced the burden on the classroom teachers because students were responsible for their learning and

they were aware that they were decision makers for their learning; they should make a decision if they understand the text or not, or if they need practice to read the text. Students also had to use the best reading strategies related to their aims. This study is toward the new trend of using technologies in teaching and learning and distance learning. In distance learning students are responsible for their own learning. They should think what is important and needs more concentration, and pay attention to their aim of study. In addition, this computer-mediated reading program enables students to monitor both their reading and comprehension; it allows students to go back and forth through texts and stop anywhere they think it is necessary.

For further studies researchers can use this way of research for other skills, like listening, and survey the different outcomes for each group. For example, after listening to a text by computer, the researcher can evaluate recalling of key words, main ideas, and topics of listening text in both introspection (immediate recall) and retrospection (time-delay recall) and also the number of times each group listen and re-listen to the script. A researcher also can conduct the same procedure and reading goals like those of this study with six groups (three non-native groups and three native groups) and evaluate the differences between these two pairs of groups.

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