# The Effect of the Thinking-aloud Strategy on the Reading Comprehension Skills of 4th Grade Primary School Students

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**Abstract**   The purpose of this study, which is designed in quasi-experimental model, is to examine the effect of the thinking aloud strategy on the reading comprehension skills of the 4th grade primary school students. For this purpose, in the second semester of 2016-2017 academic year, the reading comprehension levels of 26 students in the 4th grade at a primary school located in the central district of Turkey's Bartın province were determined by applying a pre-test. Among the two classes, whose reading comprehension levels were equal, one class was assigned as the experimental and the other as the control group in an objective manner. In the research; Reading Comprehension Test 1, which included questions about the text 'Edison Invents the Light Bulb' developed by Sulak (2014); and the Reading Comprehension Test 2, which included questions about the text 'Everything Started with a Kite' developed by the researcher were used as data collection tools. The data obtained in the study were transferred to the SPSS 18 software pack; and statistical procedures such as arithmetic average, frequency, percentage, standard deviation, Mann Whitney U, Wilcoxon Marked Rank Test were performed on the data, in the direction of the questions in the research. As the result of the research, it was concluded that there was a significant difference between the pre-test and post-test scores, in favor of the post-test scores of the experimental group students who were taught the thinking aloud strategy.

**Keywords**   Reading Comprehension, Reading Comprehension Strategies, Thinking Aloud Strategy

## 1. Introduction

Reading is a very complex mental process. Reading skill involves the ability to read and comprehend what has been read. Knowing to read alone does not make sense. The reading process reaches its intended purpose when the comprehension is fulfilled.

Reading comprehension refers to the fact that a reader reaches new conception by synthesizing what has been learned and visualized from the sources (visual and written) they have encountered using their prior knowledge [1]. Learning how to read does not mean to directly understand the text for students. For this reason, students should be trained about reading comprehension. Various techniques and strategies are used for teaching the reading comprehension. Introducing these strategies through appropriate texts will contribute to the development of the students' reading comprehension skills.

The reading comprehension strategies are the cognitive tools that can improve the students' academic performance where comprehension is difficult [10]. According to the literature review, there are a number of reading comprehension strategies and different classifications of these strategies. Duke and Pearson [9] categorized effective personal reading comprehension strategies as follows:

1. Predicting
2. Thinking-aloud
   a   Teacher's thinking-aloud
   b   Student's thinking-aloud

3. Text structure
   a   Story structure
   b   Informative text structure

4. Visual presentation of text
5. Summarizing
6. Questions/questioning

In Duke and Pearson's classification, one of the prominent strategies is the thinking-aloud strategy. In this strategy, the teacher vocally expresses his / her thoughts to his / her students on how comprehension occurs while

reading a text and improves their awareness of their comprehension processes. The strategy of thinking-aloud is a highly important in terms of both teacher's setting a model for students in order to transfer their thought processes and making the thoughts and mind of students visible.

The strategy of thinking-aloud can be examined under two titles as the teacher's thinking-aloud and the student's thinking-aloud.

### 1.1. Teacher's Thinking-aloud

As students learn better when they see a good model, teachers can voice their own thoughts by drawing attention to the important points for those having the weaknesses of comprehension ability while reading aloud [8]. In this strategy, teachers open up their minds when they read aloud. Meanwhile, students are quiet listeners and focus on how their teachers explaining. In this way, they learn how the strategy is used and how the comprehension occurs.

The steps in the implementation process of the thinking-aloud strategy are explained by Davey [8] as follows.

1. Make predictions. (Show how to develop hypotheses.)

"From the title, I predict that this section will tell how fishermen used to catch whales."
"In this next part, I think we'll find out why the men flew into the hurricane."
"I think this is a description of a computer game."

2. Describe the picture you're forming in your head from the information. (Show how to develop images during reading.)

"I have a picture of this scene in my mind. The car is on a dark, probably narrow, road; there are no other cars around."

3. Share an analogy. (Show how to link prior knowledge with new information in text.)

"This is like a time we drove to Boston and had a flat tire. We were worried and we had to walk three miles for help."

4. Verbalize a confusing point. (Show how you monitor your ongoing comprehension.)

"This just doesn't make sense."
"This is different from what I had expected."

5. Demonstrate fix-up strategies. (Show how you correct your lagging comprehension.)

"I'd better reread."
"Maybe I'll read ahead to see if it gets clearer."
"I'd better change my picture of the story."
"This is a new word to me - I'd better check context to figure it out."

This process, starting with the modeling of the teacher

and progressing on the way that the student is an independent user of the thinking-aloud strategy, is very useful in terms of enabling teachers to make internal and external observations.

Teacher's thinking-aloud leads students' thinking-aloud. The main purpose of the thinking-aloud strategy is to enable students to acquire the ability of thinking-aloud.

### 1.2. Student's Thinking-aloud

The thinking-aloud strategy is the most effective strategy to inform readers who have problems in reading comprehension, about their reading process [5]. By means of this strategy, students can be asked questions to think by the teachers during reading, and students' thoughts can be observed. Teaching the thinking-aloud strategy ensures that students are aware of their own comprehension processes. Thanks to this awareness, they can be independent readers [19].

The following five steps should be taken into account when using the thinking-aloud strategy:

1. Students should develop hypotheses by making predictions about the text.
2. Students should create mental images from the information that has been read.
3. Students should establish links between previous and new information through analogies.
4. Students should observe their comprehension by making explanations at contradictory points.
5. Students should arrange their comprehension by showing strategies [18].

The thinking-aloud strategy, which includes both teachers' and students' thinking-aloud processes, helps to develop individual comprehension skills.

### 1.3. The Aim of the Research

This study aims to examine the effect of the thinking-aloud strategy on the reading comprehension skills of 4th grade primary school students. For this purpose, the following questions were sought;

1. Is there a statistically significant difference between the reading comprehension pre-test and post-test scores of the experimental group students who were taught the reading comprehension by thinking-aloud strategy and control group?
2. Is there a statistically significant difference between the gain scores of the experimental group students who were taught the reading comprehension by thinking-aloud strategy and control?

## 2. Method

### 2.1. Research Model

This research was conducted in a semi-experimental

model with pretest-posttest control group. In some empirical studies, participants are selected from spontaneously formed groups (eg. class, institution, family units) or volunteers. It can be difficult to randomly assign these participants to the groups. In this case, semi-experimental model is preferred [7].

### 2.2. Research Group

The research group consists of 26 4th grade students studying at Şehit Üsteğmen Aydın Aydoğmuş Primary School in Bartın province, in the spring semester of 2016-2017 academic year. The experimental group consists of 14 while the control group consists of 12 students.

Among the two classes identified to be equal by the researcher, 4-A was detected as the experimental and 4-B was the control group.

The distribution of the students taking place in the research group by groups and sex is presented in Table 1 below.

**Table 1.**   Distribution of sample by groups and sex

| Group | sex | n | % | Total |
|---|---|---|---|---|
| Experimental group | Female | 10 | 91 | 14 |
| | Male | 4 | 29 | |
| Control group | Female | 5 | 42 | 12 |
| | Male | 7 | 58 | |
| Total | Female | 15 | 58 | 26 |
| | Male | 11 | 42 | |

According to Table 1, there are 14 students, being 10 females and 4 males in the experimental group. In the control group, there are 12 students, being 5 females and 7 males. The total number of the students participating in the research is 26 and 15 (58%) of them are females and 11 (42%) are males.

### 2.3. Data Collection Tools

5 informative texts in ranking type were used in the application process of the research and 2 texts were used in the comprehension texts. The texts were selected from the texts in the 4th grade Turkish textbooks of the primary school by taking expert opinions. Selecting the texts, a special attention was paid to prefer the texts that were suitable for the use of thinking-aloud strategy.

Comprehension tests were used as data collection tools in the study. The Reading Comprehension Test-1 developed by Sulak [17] was used as pre-test and the Reading Comprehension Test-2 developed by the researcher was used as post-test.

The Reading Comprehension Test-1 is a test involving a total of 10 questions (5 multiple choices and 5 open-ended) developed by Sulak for the text "Edison Invents Bulb". The

Cronbach Alpha coefficient of the test was calculated as 0.75 and the difficulty index for the whole text was found as 0.55.

The Reading Comprehension Test-2 is a test involving a total of 10 questions (5 multiple choices and 5 open-ended) developed by the researcher for the text "Everything Started with a Kite". The mean distinctiveness coefficient of the whole test was found 0.56 while the difficulty index for the whole text was found 0.50. The Cronbach Alpha coefficient was calculated as 0.70. The texts used in the comprehension tests are informative texts in ranking type.

In scoring test items for multiple choice questions; incorrect answers were scored as 1; correct answers were scored as 2 points while for open-ended questions, incorrect answers were scored as 1, missing answers were scored as 2 and correct answers were scored as 3. In the analysis of the test results, the scores converted into a hundred-system.

### 2.4. Data Collection

In the study, firstly the Reading Comprehension Test-1 was applied to 4th grade primary school students. According to the obtained results, one of the classes that are equivalent to each other was randomly assigned as the control group while the other was the experimental group. A total of 10 weeks of lectures, 2 hours per week were conducted with the experimental group by the researcher, taking into account the stages of Davey [8]. The courses of the control group students were conducted by the class teacher in accordance with the activities included in the Turkish teaching program. At the end of the 10-week period, the Reading Comprehension Test-2 was applied as post-test to the students in the experimental and control group.

### 2.5. Data Analysis

The scores obtained from the pre- and post-test of the research were converted to a hundred-system and transferred to the SPSS 18 package program, analyzed and presented in tables. Nonparametric tests were preferred in the analysis of data in view of the fact that the number of data should generally be over 30 in order to be able to meet the parametric test counts [6]. Arithmetic mean, frequency, percentage, Mann Whitney U Test, and Wilcoxon Sign Test were used in the analysis of the data. In order to find out the difference between the behaviors of the students at the beginning and the end of the training, gain scores were calculated by subtracting the pre-test scores from the post-test scores.

## 3. Findings

This section provides information about the findings and related interpretation. The ranking of the sub-problems is

followed while interpreting the findings.

### 3.1. Findings Related to the First Sub-problem

The results of the Wilcoxon Signed Ranks Test applied to find out whether there is a statistically significant difference between the reading comprehension pre-test and post-test scores of the experimental group students who were taught the reading comprehension by thinking-aloud strategy are presented in Table 2.

**Table 2.** Wilcoxon Signed Ranks Test results between the pre-test and post-test scores of the experimental group

|                | n  | Ranking average | Total ranking | z    | p      |
|----------------|----|-----------------|---------------|------|--------|
| Negative ranks | 0  | 0               | 0             | -2.825 | 0.005* |
| Positive ranks | 10 | 5.50            | 55            |      |        |
| No difference  | 4  |                 |               |      |        |

*p<0.05

**Table 3.** Wilcoxon Signed Ranks Test results between the pre-test and post-test scores of the control group

|                | n | Ranking average | Total ranking | z      | p     |
|----------------|---|-----------------|---------------|--------|-------|
| Negative ranks | 6 | 6.67            | 40            | -0.080 | 0.93* |
| Positive ranks | 6 | 6.33            | 38            |        |       |
| No difference  | 0 |                 |               |        |       |

*p>0.05

**Table 4.** Mann Whitney U Test Results on the Reading Comprehension Gain Scores of the Experimental and Control Groups

| Groups             | n  | Ranking average | Total ranking | U     | p      |
|--------------------|----|-----------------|---------------|-------|--------|
| Experimental Group | 14 | 16.68           | 233.00        | 39.50 | 0.021* |
| Control group      | 12 | 9.79            | 117.00        |       |        |

*p<0.05

According to Table 2, there is a statistically significant difference between the pre-test and post-test scores of the experimental group [z = -2.285; p <0.05]. The fact that the difference scores are in favor of the positive ranks suggests that the strategy of thinking-aloud has a significant effect on the reading comprehension ability of the students.

The results of the Wilcoxon Signed Ranks Test applied to find out whether there is a statistically significant difference between the reading comprehension pre-test and post-test scores of the control group students are presented in Table 3.

According to the results of the Wilcoxon Signed Rank Test conducted to determine whether there was a difference between the pre- and post-test scores of the control group students, there is no statistically significant difference between the pre-test and post-test scores of the control group students as presented in Table 3 [z=-0.080; p>0.05].

### 3.2. Findings Related to the Second Sub-problem

The results of the Mann Whitney U Test applied to find out whether there is a statistically significant difference between the reading comprehension gain scores of the experimental students who were taught the reading comprehension by thinking-aloud strategy and the control group are presented in Table 4.

As presented in Table 4, according to the results of Mann Whitney U, test applied to determine whether there is a statistically significant difference between the gain scores of the groups included in the post-test, there is a significant difference between the groups in favor of the experimental group [U=39.50; p<0.05]. This result shows that the thinking-aloud strategy has a positive effect on the reading comprehension skill.

## 4. Conclusion and Discussion

This study aims to examine the effect of the "thinking-aloud" strategy on the reading comprehension skills of 4th grade primary school students. To this end, the obtained results are presented in line with the sub-problems:

According to the results of the Wilcoxon Signed Rank Test conducted to determine whether there is a difference between the pre- and post-test scores of the experimental group students who were taught the reading comprehension by thinking-aloud strategy and the control group students, there is a statistically significant difference between the pre-test and post-test scores of the control group students [z=-2.285; p<0.05]. The fact that the difference scores are in favor of the positive ranks suggests that teaching the strategy of thinking-aloud has a significant effect on the reading comprehension ability of the students. According to the results of the Wilcoxon Signed Rank Test conducted to determine whether there is a difference between the pre- and post-test scores of the control group students, there is no statistically significant difference between the pre-test and post-test scores of the control group students [z=-0.080; p>0.05].

According to the results of Mann Whitney U test applied to determine whether there is a statistically significant difference between the reading comprehension gain scores of the experimental and control groups, there is a significant difference between the groups in favor of the experimental group [U=39.50; p<0.05]. This result shows that the thinking-aloud strategy has a positive effect on the reading comprehension skill.

According to findings, it can be seen that the teaching of the thinking-aloud strategy has positively developed the reading comprehension skills of the students. The findings of the present research are in parallel with the findings of the researchers who have investigated the effect of the thinking-aloud strategy on reading comprehension levels [2, 3, 4, 11, 12, 13, 14, 15, 16].

Taking into consideration the results of the above-mentioned researches, the importance the

thinking-aloud strategy in improving the reading comprehension skills is revealed. The importance of the use and teaching of the thinking-aloud strategy can be better understood considering its benefits such as; this strategy improves the social interaction of the students [13], it activates self-regulation strategy of students when encountered with comprehension difficulties [4], students encouraged to think-aloud are more successful than other students in summarizing etc. [15].

Based on research findings, following suggestions have been develoed to teachers, educators and researchers as well.

- The thinking-aloud strategy should be promoted through appropriate texts in order to improve the reading comprehension skills of the students.
- Student workbooks should include activities for the thinking-aloud strategy.
- Pre-service teachers and teacher should be taught to think-aloud.
- Further research can examine the effect of the thinking-aloud strategy on the achievement in other courses (mathematics, science, etc.).
- This study has examined the effect of the thinking-aloud strategy on the reading comprehension skills. Further studies can examine the effect of this strategy on speaking, writing and listening skills as well.

## Note

This study is part of first author's master thesis titled "The impact of the thinking aloud strategy on reading comprehension skills of 4th grade primary school students".

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