DEVELOPING A CRITICAL EYE THROUGH REASONING FALLACIES

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Abdulvahit ÇAKIR

ABSTRACT

The aim of this study was to explore the impact of raising awareness about reasoning fallacies on the development of critical reading skills of the first grade students in the ELT department, Gazi Faculty of Education. It was evaluated via a 56-question reasoning fallacies test confining seven questions to each fallacy studied in this research. Although there are numerous kinds of fallacies, between 14 and 191 to be more precise, the common ones were chosen in accordance with the reasoning fallacies test for practical reasons. In addition to this, during the literature review, some other common fallacies were determined and included in this dissertation. This study compared the students trained explicitly about questioning the arguments and argumentative texts on the one side and the students in the ordinary reading classes following the regular syllabus in terms of awareness about reasoning fallacies.

A true experimental design was used to collect data through pre- and post-tests. The collected data were analyzed by using independent samples t-test, Wilcoxon signed-ranks test and Mann-Whitney U-test. The experimental group consisted of 27 students and the control group consisted of 24 students. The groups were randomly selected from among ten classes.

The results of the analysis revealed that there was a statistically significant difference between the experimental group and the control group after the treatment (p<0.01). According to the results, it can be concluded that students can improve their critical reading skills through learning how to determine reasoning fallacies. In accordance with the study and its results some implications were discussed and some suggestions were made for further research.

Key Words: Critical Reasoning, Reasoning Fallacies, Teaching Fallacies, Critical Reading
ÖZET


Analiz sonuçları, uygulama sonrasında deney ve kontrol grubu arasında anlamli bir fark olduğunu göstermiştir (p<0,01). Elde edilen sonuçlar doğrultusunda, öğrencilerin, eleştirel okuma becerilerini muhakeme yanlışlarını öğrenerek geliştirebilecekleri sonucuna varılmıştır. Çalışmayla ve çalışmanın sonuçlarıyla paralel olarak bazı sınıf içi uygulamalar tartışılmuştur.

Anahtar Kelimeler: İngiliz Dili Eğitimi, Eleştirel Muhakeme, Muhakeme Yanlışları, Muhakeme Yanlışları Öğretimi, Eleştirel Okuma

1. Introduction

The world of today is more sophisticated and technological than ever. We are surrounded by media in all aspects of our lives and we are bombarded with ideas, values and advertisements. Crossley and Wilson (1979) point out language is a powerful tool, but it can be misused. People might try to persuade you by means of all sorts of appeals – by playing on your sympathies, your likes and dislikes, your fears, and so on. The key point about all of them is that they are very frequently successful as persuasive measures. But they do not succeed by logically connecting facts and drawing reasoned conclusions from them; their effect depends on trickery, emotional appeals, or threats of one sort or another. Such tricks and illogical moves are called fallacies. These fallacies can be observed in advertisements, political texts, arguments, and even in scientific articles. Damer (2001) defines fallacy as a violation of one of the criteria of a good argument. Any argument that fails to satisfy one or more of the four criteria is a fallacious one. Fallacies, then, stem from the irrelevance of a premise, from the unacceptability of a premise, from the insufficiency of the
combined premises of an argument to establish its conclusion, or from the failure of an argument to
give an effective rebuttal to the most serious challenges to its conclusion or to the argument itself.
Beginning with Aristotle, informal fallacies have generally been placed in one of several
categories, depending on the source of the fallacy. There are fallacies of relevance, fallacies
involving causal reasoning, and fallacies resulting from ambiguities.

1.1 Reasoning Fallacies

Fallacies are poor arguments the premises of which fail to satisfy the support of its
conclusion. Although arguments have good forms, they are faulty in the reasoning. Fallacies are
typical errors in reasoning that we commonly come across and can see if examine them critically.
Tindale (2008) quoting Humblin gives the definition as “A fallacious argument, as almost every
account from Aristotle onwards tells you, is one that seems to be valid but is not so” (p. 2).
Similarly, Copi and Cohen (2004, p. 39) define fallacy as “An error in reasoning, a kind of
argument that may seem to be correct, but that proves, on examination, not to be so”.

As mentioned in the definitions above, fallacies seem to be correct, and also they are
psychologically persuasive. In everyday life, we encounter such fallacious arguments a lot; for
instance, in political speeches, advertisements, newspapers, courtroom speeches by lawyers etc. In
order not to be persuaded by these kind of word tricks we, as critical thinkers, should be aware of
the fallacies. Walton (1995, pp. 237-238) presents six basic characteristics of fallacies:

1. A failure, lapse, or error, subject to criticism, correction, or rebuttal.
2. A failure that occurs in what is supposed to be an argument (argument requirement).
3. A failure associated with deception or illusion.
4. A violation of one or more of the maxims of reasonable dialogue or a departure
from acceptable procedures in that type of dialogue.
5. An instance of an underlying, systematic kind of wrongly applied technique of
reasonable argumentation (argumentation theme).
6. A serious violation, as opposed to an incidental blunder, error, or weakness of
execution.

It is impossible to list every fallacy that has been employed to change how people think.
The list would be too long to be useful. Accordingly, only the most common and representative
techniques are discussed in the current study. If we understand how fallacies work in general, we
will be better prepared to recognize and defend against them. Toulmin, Rieke, and Janik (1984, p.
132) call the ability to recognize fallacies “a kind of sensitivity training” because they train the
reader to be sensitive to common tricks of persuasion.

In foreign language teaching, four basic skills are stressed: listening, speaking, reading and
writing. However, reading is recognized as the most needed skill in the national examinations such
as YDS (Foreign Language Exam) and LYS (Undergraduate Placement Exam) in Turkey.
Grammar and vocabulary are also emphasized, though the critical interpretation of the passage is
often ignored. The study of texts is usually at a literal level. Rarely do the teachers spend time on
teaching how to read critically. Reading has a social dimension; individuals have social
dimensions, too. Mill (1886) expresses that “The only complete safeguard against reasoning ill is
the habit of reasoning well; familiarity with the principles of correct reasoning, and practice in
applying those principles” (p. 482). Thus, training in critical reading and fallacies in reasoning
make students and teachers better thinkers, listeners, speakers and readers.
1.2 Related Studies

There are few studies on fallacies in education carried out in the USA. Sukchotrat (1980) investigated the ability of Thai university freshmen to detect common fallacies in reasoning. She found that the students do not have sufficient knowledge and experience in detecting fallacious language. In his study Laureano (1981) examined the growth in the critical reading ability of Puerto Rican students in grades four, eight and twelve. According to his study Puerto Rican public schools do not develop the skills necessary to detect fallacious language at a very high level.

Callen (1984) examined similarities and differences between elementary and secondary education majors in their ability to detect fallacies at The Florida State University and found a significant difference in favor of secondary education majors. According to the findings, she suggests that the specific fallacies in reasoning should be taught as part of coursework in the teacher education programs for both the elementary and secondary education majors.

Many other researchers such as Mosley (1978), Galotti et al. (1999), Turner (2000), Chan and Elliot (2002), and Ricco (2007) investigated fallacies in different aspects on various subjects. All these researchers found out that fallacies are neglected in education and students should be trained not only in reading comprehension skills but also in writing and speaking skills.

In addition to these studies on reasoning fallacies Callen (1984) refers to some other research such as Lyons who concludes that many teachers could not teach because they lack the requisite skills to instruct competently. She also refers to Reutzel and Swindle’s study which reported that those who choose teaching as a career often have inadequate reading skills.

Alev Alatlı and a group of researcher translated the types of fallacies, and published a book titled Safsata Klavuzu (A Guide for Fallacies) in 2001 and it is the only study carried out in Turkey.

1.3 Purpose of the Study

The purpose of this study is to find an answer to the question of “Can critical reading skills be improved better by raising consciousness about common reasoning fallacies?” Specifically, the research was conducted in order to find answers to the following questions:

1. Are the first grade EFL teacher trainees able to detect fallacies in reasoning?
2. If they are not able to detect them, what are the reasons? Is it because they do not have the knowledge or is it because of the language?
3. Can this ability be improved without training or should it be fostered through activities in reading courses?
4. Are there significant differences between male and female students in their ability to detect certain reasoning fallacies?

Since there are a great number of fallacies, this study covered eight of the most common fallacies in daily life for practical reasons. As noted before, the aim of this study is not to teach the names of all these fallacies but to make students develop the habit of questioning and seeking answers while reading argumentative texts.

Although fallacies are related to all the four skills, this study is limited to the reading skill. The reason why reading was chosen is the assumption that students are better in reading than writing. Since people model their writing on the texts they read, critical reading ability should be improved first to make our students better writers.
2. Methodology

2.1 Research Design

The present study was conducted using a quantitative methodology. Scanlon (2000) briefly lists the most common types of quantitative research as, “Surveys, tests, structured interviews, laboratory experiments, and non-participant observation. One of the important features of quantitative research is that it is highly structured and produces data which are amenable to statistical analysis” (p. 7). Similarly, Wilkinson (2000) points out that “Quantitative data are those types of data that can usually be reduced to numerical form. The analysis of these data types involves manipulating them in some way and/or applying some form of statistical test” (p. 81).

Among these quantitative data collection methods, “True experimental design is regarded as the most accurate form of experimental research, in that it tries to prove or disprove a hypothesis mathematically, with statistical analysis” (Shuttleworth, 2008, para. 1). Furthermore, in his opinion, for a design to be classified as true experimental, it should meet the following criteria:

- The sample groups must be assigned randomly.
- There must be a viable control group.
- Only one variable can be manipulated and tested. It is possible to test more than one, but such experiments and their statistical analysis tend to be cumbersome and difficult.
- The tested subjects must be randomly assigned to either control or experimental groups (Shuttleworth, 2008, para. 3).

This study meets all the above criteria so it is a true experimental research design with a pre-test–post-test control group. The experimental design is represented in the table below:

<table>
<thead>
<tr>
<th>Table 1: Research design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Class 1</td>
</tr>
<tr>
<td>Class 2</td>
</tr>
</tbody>
</table>

R = Random assignment; n = Number of the participants; O = The Reasoning Fallacies Test; X = Experimental treatment; Class 1 made up the control group and class 2 made up the experimental group.

The study was designed to investigate the impact of raising awareness about reasoning fallacies on the development of critical reading ability. The research for this study was conducted in the ELT Department, Gazi Faculty of Education, Gazi University, during the spring term of 2008-2009 academic year. Assuming that the students have already been assigned to classes randomly, two classes from the first year ELT students were randomly selected from among the five classes and one of them was assigned as the experimental group, the other as the control group.

2.2 Universe and Sampling

The research for this study was conducted in the ELT Department, Gazi Faculty of Education, Gazi University. Convenience sampling method was chosen to select the participants for the study. Cohen, Manion and Morrison (2005) mention that convenience sampling is sometimes called, accidental or opportunity sampling and they explain that “convenience sampling method involves choosing the nearest individuals to serve as respondents and continuing that
The sample of the study consisted of 51 pre-service teachers in the ELT department. All the participants in this study were attending ‘Advanced Reading and Writing Skills’ course during the spring semester of 2008-2009 academic year. As this course is taken in the first year of the program, all of the participants were first grade students. The participants included 43 female and 8 male students, who were 19 or 20 years old.

The experimental group comprised 27 students while the control group comprised 24 students. 23 students were female and 4 were male in the experimental group. In the control group, there were 20 female students and 4 male students. At the very beginning of the study, there were 29 students in the experimental group. After the administration of the pre-tests, it was understood that two of the students were repeating the course. Supposing that they might have improved their language skills because of the other courses they had taken, their data were not included in the study.

2.3 Instruments

The Reasoning Fallacies Test as used as a quantitative data collection tool for this study. The instrument was taken from the study by Holihan (1980). In her study, ‘The Relationship between the Ability to Detect Written Fallacies in Reasoning and Realistic Levels of Career Aspiration of Students in Grade Twelve,’ she acknowledges that the test was originally developed by Gall (1973), and extended by Johnson (1974), Hurst (1977) and Mosley (1978). The test is comprised of 56 multiple choice questions, seven for each of the eight fallacies given below:

1. Appeal to False Authority
2. Either-or
3. Hasty Generalization
4. Self-contradiction
5. Appeal to Common Practice
6. Part-whole
7. Stereotyping
8. Sexism

The process in preparing a translated version of an assessment tool has always been problematic in any research. There are various approaches to translation and adaptation of assessment tools. The technical minutiae about these processes are not going to be dwelled upon here. Brislin (as cited in Douglas & Craig, 2007) states that “A procedure that is commonly used to test the accuracy of translation in multicountry research is back translation”. However, as Brislin et al., 1973; Hambleton, 2001; Perneger, Leplege, and Etter, 1999; Van de Vijver and Tanzer, 1997 (as cited in van Widenfelt, Trefers, de Beurs, Siebelink&Koudijs, 2005, p. 136.) stated that a simple single forward and back-translation procedure would be an insufficient method of making and checking the quality of a translation and if it is going to be used as the only method, it can result in a poor translation. Van Widenfelt et al. (2005) also states that if the standardized instruments are translated into other languages with the goal of having a back-translation, it may result in inadequate consideration of the applicability of concepts in the new culture. Consequently, Douglas and Craig (2007) emphasize that when there is a need for literal or direct translation is required, back-translation method can be said to be the most useful, but it is not when there is a
need for the translation of the idioms or when the equivalence of a term or construct in another language is needed. Van Widenfelt et al. (2005) propose creating a translation team for the task. In the same way, Douglas and Craig (2007) propose an alternative approach to back translation and name it as ‘Collaborative and Iterative Translation’. Similar steps, which are explained for creating a translation team in these studies, are followed in this research.

The translation team was set up of three experts, who were both fluent in English and had expertise in the field. After the individual translations were made, the team members met and discussed the differences in the translated version of the test. These differences were negotiated and the final version agreed upon was also proofread and edited by a professor of English. Since there were examples of spoonerisms in some of the items in the original version of the test where literal translation would not work, free translations were used to maintain the desired effect.

The answer sheet also included two demographic questions about age and gender in order to investigate whether there are significant differences between test results and these variables.

2.4 Procedure and Treatment

It is the aim of this research to find out whether it is necessary to teach explicitly how to detect reasoning fallacies in order to improve critical reading abilities or it is enough to continue teaching classes in the traditional way with no special emphasis on fallacies to attain the same results.

This research was completed in 10 weeks, studying three class hours per week. Our ten-week study also included the administration of the pre-tests (both in English and Turkish) and post-tests. Training was carried out by the same lecturer in the same classrooms so as to maintain the students’ usual learning atmosphere and to eliminate the “teacher effect”. The lecturer was trained in advance and provided with the necessary activities for the implementation process.

The activities were designed depending on the reviewed literature. Then I and the lecturer of the groups met and she was informed about the purpose of the study. We agreed to meet twice a week, before the lesson and after the lesson. Every week the lecturer was provided with the activities along with the necessary explanations.

Before the instructional experiment, the English version of the pre-test was applied to both the experimental and the control groups in order to test their knowledge about the topic. The test results revealed that neither groups had sufficient knowledge about the reasoning fallacies. The mean score was around 28. The pre-test scores were analyzed by using independent samples t-test. The results also showed that there were no statistically significant differences between the experimental and control group (p>0.05). In order to make sure whether the students did not really know much about the fallacies or whether their poor performance was due to their limited English knowledge, the Turkish version of pre-test was applied to the same participants two weeks later. Then, both Turkish and English pre-test scores were analyzed by using Mann Whitney U test and Pearson Correlation. The results revealed that the language of the test had no effect on the scores (p>0.05). The reasoning fallacies were taught explicitly in the experimental group while in the control group students were instructed in the same as before. The students were presented with fallacies by naming them and explaining how to apply them to arguments; the instructor modelled the fallacies on some arguments; the students were provided with opportunities to practice finding the reasoning fallacies in a variety of activities. It was aimed to enhance their ability to assess an argument and detect reasoning fallacies. The treatment will be explained in the following paragraphs.
In the first week of the treatment, since the study topic was fallacies and fallacies could be seen only in arguments or argumentative texts, students were taught the first requirement to search for arguments: knowing the difference between fact and opinion. They were shown three sets of five sentences via PowerPoint slides and asked to find the odd one in the sentence sets. Then the definitions of these concepts were introduced and the signal words used in fact and opinion sentences were given. They were given some statements to be identified as facts or opinions. One of the useful ways to learn the difference between the two is to turn them into each other, so students were given some facts and asked to put them into opinions. It was explained that a paragraph might contain both facts and opinions. As a post activity they were given a paragraph and asked to underline the facts and highlight the opinions with a color-pen.

In the second week, the students were asked to define ‘argument’. As expected, most of them defined it in its first sense as ‘a situation in which two or more people disagree, often angrily’. The term argument and its elements, which are premises and conclusion, were introduced through the lecture mode. A sufficient number of examples were provided to make these concepts clear in their mind. Then the students were given samples of effective and poor arguments to show the flaws of reasoning in arguments. They were also given a fairly difficult task and asked to find the premises and the conclusions in the paragraphs.

After they had passed through these basic stages in critical reading, they were ready to be introduced to reasoning fallacies in the third week of the study. The things learnt in the previous lesson were reviewed with the class. After the revision, the lecturer gave the definition of a fallacy in English and explained that philosophers classified fallacies in different ways and there were a great number of fallacies. Therefore, they were told that they were going to be taught the fallacies most likely to be encountered in daily life. Two of the fallacies, namely ‘appeal to false authority’ and ‘either-or’, were introduced through lectures and examples. Then the students were given a task and encouraged to find out the premises and conclusions, and identify the fallacies.

In the fourth week, at the beginning of the lesson, the students were given three dialogues to remember the things covered in the previous lesson. The next two fallacies, namely Hasty Generalization and Appeal to Common Practice, were introduced explicitly through lecturing and giving examples. Then they were given some tasks like those in the previous weeks.

In the fifth week of the treatment, the lesson started with a brainstorming activity about the things learnt up to that week. They were asked about the fallacies and the ways to challenge an argument. Later, they were given some fallacious statements and were asked to determine the fallacies in the statements. They did the task, and explained the underlying reasons for these fallacies but, of course, could not name them. The scientific terms and definitions of these fallacies, which are Part-whole Fallacy and Self Contradictory Fallacy, are given via lecturing. Students got accustomed to the lecturing style and the order of the presentation of the lesson, so as in the previous weeks, they were given some tasks to complete.

In the last week of the treatment, students were given some proverbs and sayings in their native language, and were asked to examine them in terms of reasoning fallacies. E.g. “Elinin hamuruyla erkek işine karışma” (it is said in situations when men do not want women to involve in a work). Slang word, “Karı gibi ağlamak” (whine like a woman). “Erkek adam ağlamaz” (men never cry). Since these sentences are commonly used in daily life and has been repeated through the ages, the task was difficult; however, as they had gained an insight into reasoning and fallacies in reasoning, they easily discovered the fallacies and they almost correctly named the fallacy as ‘appeal to gender’. Then they were introduced the last two fallacies for the treatment, which are Sexism and Stereotyping Fallacies. They were provided with a number of examples and they were given tasks to identify these fallacies. Because it was the last lesson of the treatment, the students
were presented with examples for each of the fallacies in a mixed way and were asked to identify the kinds of these fallacies by giving reasons.

A week after the treatment, the post-test was administered to both the experimental group and the control group.

3. Results

3.1 Data Analysis

Calculations and data analyses were performed by using the SPSS 15.0 statistical software program. Statistical significances were determined by independent samples t-tests, Wilcoxon signed ranks tests, and Mann Whitney U-tests. Differences were considered to be statistically significant if p<0.05.

3.2 Analysis of the Pre-test Scores

Table 2: The results of the independent samples t-test in reasoning fallacies test.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>mean</th>
<th>S</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>27</td>
<td>27.52</td>
<td>5.77</td>
<td>49</td>
<td>1.46</td>
<td>0.150</td>
</tr>
<tr>
<td>Control</td>
<td>24</td>
<td>29.71</td>
<td>4.80</td>
<td>48.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Presented in the above table are the statistics of the pre-test scores of both experimental and control groups. An independent samples t-test was used to determine whether the first year teacher trainees had any knowledge of fallacies. This test also helped us compare the reasoning fallacies pre-test to determine if there was a significant difference between experimental and control groups before the treatment. As can be seen from the table, no significant difference was found between the mean scores of the experimental and control groups (p>0.05). The mean score in the experimental group was 27.52 (standard deviation 5.77) and in the control group the mean score was 29.71 (standard deviation 4.80). For this reason, it could be said that the knowledge level of both groups was almost the same. The answer to first research question was no, in other words, they were not able to detect reasoning fallacies in reading texts.

Since the students could not detect reasoning fallacies, the second question had to be answered. Fifteen days after the application of the English pre-test, the Turkish form of pre-test was applied so as to prevent any transfer. In order to find out the answer to the second question, the independent samples t-test was employed. The below table below illustrates the results.

Table 3: The results of independent samples t-test analysis of the English and Turkish pre-test scores

<table>
<thead>
<tr>
<th>Test language</th>
<th>n</th>
<th>mean</th>
<th>S</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkish</td>
<td>51</td>
<td>28.59</td>
<td>7.23</td>
<td>100</td>
<td>.031</td>
<td>.975</td>
</tr>
<tr>
<td>English</td>
<td>51</td>
<td>28.55</td>
<td>5.40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As presented in table 3, no significant difference between the English and Turkish forms of the test was found (p>0.05), which showed that the students had not had the knowledge even in their native language. The cause of the low scores was not the language; thus it could be said that the language did not affect the results. The mean scores for both tests were almost equal (Turkish mean score=28.59; English mean score=28.55 ).
3.3 Comparisons of Pre and Post-test Scores

In order to find an answer to the question “Can this ability be improved without training or should it be fostered through activities in reading courses?” the results of the control group were analyzed via Wilcoxon signed ranks test.

<table>
<thead>
<tr>
<th>Table 4: Wilcoxon signed ranks test results of the control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test/post-test</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Negative Ranks</td>
</tr>
<tr>
<td>Positive Ranks</td>
</tr>
<tr>
<td>Ties</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

a post < pre
b post > pre
c post = pre

The above table illustrates that there was no statistically significant difference between pre-test scores and post-test scores of the control group (p>0.05). It can be concluded that following the ordinary reading syllabus, which deals with finding answers to the questions based the text, does not improve students’ ability to detect reasoning fallacies.

<table>
<thead>
<tr>
<th>Table 5: Wilcoxon signed ranks test results of the experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test/post-test</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Negative Ranks</td>
</tr>
<tr>
<td>Positive Ranks</td>
</tr>
<tr>
<td>Ties</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

a post < pre
b post > pre
c post = pre

In order to answer the same question, the same procedure was applied to analyze the pre-and post-test scores for the effects of instruction on the ability to detect certain fallacies. As is seen in table 5, there is a statistically significant difference between the pre and post-test results of the experimental group (p <0.01) after the treatment. Furthermore, it was found to signify a strong effect (r=.87) in the post-test. The empirical evidence indicated that the ability to detect reasoning fallacies can be improved with training.

<table>
<thead>
<tr>
<th>Table 6: Mann-Whitney U-test results of the comparison between experimental and control group post-test scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Experimental</td>
</tr>
<tr>
<td>Control</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Mann-Whitney U-test was used so as to be able to answer the fourth question of the present study and to analyze the difference between groups and the effects of the treatment. Table 6 shows
the difference between the post-test scores of the groups. It shows that there is a statistically significant difference between the experimental group and the control group in terms of the post-test scores ($p < 0.01$). This figure allows us to infer that the treatment affected the post-test scores in a positive way.

As in most studies, which deal with social studies, gender differences are also assessed in this study. So our next question to be answered is whether there is a difference between boys and girls in their ability to detect reasoning fallacies.

<table>
<thead>
<tr>
<th>Gender</th>
<th>n</th>
<th>Mean Rank</th>
<th>Sum of Ranks</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>4</td>
<td>13.38</td>
<td>53.50</td>
<td>43.50</td>
<td>.863</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>14.11</td>
<td>324.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

As table 7 shows, no statistically significant difference concerning gender was found in this study ($p>0.05$). It allows us to come to the conclusion that both male and female students can detect the fallacies at the same level if trained.

4. Conclusion

This study explored the hypothesis that learning fallacies helps students to gain a critical eye as readers and therefore it can be suggested that fallacies should somehow be incorporated in reading classes. Data were collected from an experimental group in a pre- and post-test design with a control group. The scores of the pre and post tests were analyzed to see the differences between the experimental and the control groups.

The first research question for the study investigated whether or not the first year students in the ELT department were able to detect the reasoning fallacies in reading texts, and our first hypothesis was the first year students in ELT department were not able to detect reasoning fallacies. To measure this, a pre-test was applied to both the experimental group and the control group. The results revealed that neither group had this ability and both groups had almost the same mean scores on the English version of the pre-test; the mean score for the experimental group was 27.52 and the mean score for the control group was 29.71. Since the analysis of variance revealed that they could not do well in the English version of the test, our first hypothesis was accepted.

After finding out that the students performed badly on the English version of the test, we wanted to make sure whether these poor results stemmed from the students’ level of English or not. Our second hypothesis was “The language of the test does not have any effect on the students’ results”. So, in order to test this hypothesis the Turkish version of the test was given to the students 15 days later. The results showed that their poor performance did not result from a language barrier. They failed to detect reasoning fallacies on the tests in English or in Turkish. Thus, our second hypothesis about the language barrier was verified.

As regards the findings of the pre-tests, it was hypothesized that the students could improve this skill via an explicit instruction. It was hypothesized that fallacies should be taught explicitly by giving examples from the real life and modeling how to ask hard-hitting questions. The necessary activities were provided for the lecturer and she was trained before the lessons. Corresponding to the literature, the training steps were explained below:
1. Students should learn to differentiate facts and opinions, because almost all the arguments appear in opinion paragraphs and facts generally cannot be questioned.

2. Second step should be recognizing arguments and parts of an argument; premises and conclusion. They should know the indicators to recognize the arguments easily. They are also explained that some arguments might have implicit premises.

3. The final step should be evaluating arguments by questioning.

After the treatment, both groups were given the post-tests and the scores were analyzed by using SPSS 15 software program. The answer to the third question was sought via these scores. The results of the analysis evidenced that the ability to question the arguments and find reasoning mistakes, namely fallacies, could not be improved through ordinary reading courses where the students were only responsible to find answers to questions about the texts and to fill some tables according to the texts. In addition to this, the comparison of the post-test results of the groups showed that there was a statistically significant difference between the experimental group and the control group. Since the analysis of variance revealed that there was a statistically significant difference between the groups, our third hypothesis was accepted.

Because Sukchotrat (1980) found statistically significant differences between genders on some fallacies such as fact and opinion fallacy, false-cause fallacy and stereotyping fallacy, our last research question aimed to find out whether there was a difference between genders in terms of detecting reasoning fallacies. Accordingly, we formulated our last main hypothesis as “There are statistically significant differences between males and females in certain fallacies”. The data gathered was analyzed to test this hypothesis. The Mann-Whitney U-test used for this purpose revealed that there existed no difference between genders in the reasoning fallacies as a whole (see table 7).

In conclusion, consistent with the research findings, it can be argued that teachers should know how to unearth senders’ intentions and fallacies, which are committed particularly to persuade others, and try to model their students develop an understanding of critical reading and listening.

4.1 Pedagogical implications

Critical thinking is a higher order thinking skill which is required in the solution of many problems encountered in life. Detecting reasoning fallacies obviously contribute to the improvement of this skill. Therefore any language course involving exchange of information offered at the university level should include some training to raise awareness about reasoning fallacies. When the students internalize this ability, they can easily adopt this skill in their lives when reading, listening, writing or speaking in all the languages they know. As previously mentioned, meaning is created subjectively and it changes according to the context in which it occurs, we need to be careful while reading or listening; in addition to this if there is an argument we should understand the reasons or causes of that argument by using logic and critical reasoning. Such an approach to reading and listening will certainly increase the students’ comprehension of the oral as well as written texts.

Knowing the names of fallacies is not that important, the important point here is to develop an attitude of questioning what we hear or read and try to find mistakes or tricks that are intentionally or unintentionally done to persuade us. We come across fallacies in everyday life and teachers can find a lot of authentic examples for their students. For classroom discussions teachers may ask students to find authentic texts and ask them:

1. to find the facts and opinions (while-reading activity).
2. to identify words, phrases or sentences that appeal to our emotions (while-reading activity).

3. to find out the ambiguous sentences or sentences which lack well-organized arguments and need clarification (while-reading activity).

4. to figure out the arguments and then underline or highlight the parts of the arguments (while-reading activity).

5. to question and find out the fallacies that take place in those texts (while-reading activity).

6. also teachers may ask them to note the fallacies that are committed by the guests on TV discussion programs or even committed by politicians in their public speeches (pre-reading activity).

7. to correct the fallacies in the text by rephrasing them (post-reading activity).

Since this study was carried out as part of a PhD dissertation, the fallacy types introduced and the time spared to teach them may be too much for the special purpose of the reading course. However, teachers can adjust their time and syllabus in a way as to include as many types of reasoning fallacies as they find suitable for their students.

4.3 Limitations and future research

Since there are a great number of fallacies, this study covered eight of the most common fallacies in daily life for practical reasons. As noted before, the aim of this study is not to teach the names of all these fallacies but to make students develop the habit of questioning and seeking answers while reading argumentative texts.

Although fallacies are related to all the four skills, this study is limited to the reading skill. The reason why reading was chosen is the assumption that students are better in reading than writing. Since people model their writing on the texts they read, critical reading ability should be improved first to make our students better writers. Since our courses cover both reading and writing, the students were also asked to write two argumentative texts; however, this study is limited to reading only. Improving writing skills could be the concern of another study.

This study is also limited to first year students at Gazi University because with the new curriculum the reading skill is taught only in the first year course; “Advanced Reading and Writing Skills”.

In the last decade, there have been growing interest in critical thinking and reading in Turkey, actually it has come to be called critical literacy recently. However, there have been a few studies related to teaching critical literacy as part of a curriculum or at least part of a syllabus of some courses. Furthermore, no studies were found related to the teaching of fallacies in ELT classes or even in reading classes in the native language.

Interdisciplinary research has been recognized and encouraged by the institutions; so more studies can be done via joint projects between ELT departments and philosophy departments. And other topics of logic, such as entailment and tautology, can be applied to ELT in order to improve prospective teachers’ views and high order thinking skills.

For the treatment part of the present study, we choose a reading course for practical purposes. However, reasoning fallacies are at least important in other skills like writing, listening and speaking. For this reason, this topic may also be made use of improving students’ other skills, specifically argumentative writing skills.
This study was limited to first year students enrolled in the ELT Department at Gazi University; another study may be carried out to find an answer to the first research question of this study with more participants, including more students from other classes as well. A large survey across different universities can be carried out in order to determine the level of awareness concerning reasoning fallacies.

Finally, in public and private sectors related to communication and public relations, the strategic use of reasoning fallacies could also be incorporated. For example, critical discourse analysts could study the language used in advertisements and newspaper articles from this perspective.

REFERENCES


