



**REDUCING LOGICAL FALLACIES IN TERTIARY COLLEGE
WRITING THROUGH TEACHER CORRECTIVE FEEDBACK**

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M.A. THESIS

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TELİF HAKKI VE TEZ FOTOKOPİ İZİN FORMU

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ÖĞRETMEN DÜZELTİCİ GERİBİLDİRİMİ İLE YÜKSEKÖĞRETİM SEVİYESİ YAZIMINDA MANTIKSAL HATALARIN AZALTILMASI

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ÖZ

Yazma becerisi, İngilizce öğretiminin önemli bir bileşenidir. Öğrencilerin genel yazma becerilerini geliştirmek için öğrenme fırsatları sağlamanın yanı sıra, akademik yazma kurallarını öğretmek de öğrencileri akademik yaşamlarına daha iyi hazırlamak için önemlidir. Akademik yazıyı öğretirken, tartışmacı yazma, öğrencilerin bir konuyu çeşitli yönlerden tartışmalarına, iddialarını ve savunularını destekleyecek kanıtlar sunarak okuyucuları ikna etmelerine olanak tanıdığından çok önemlidir. Fakat, öğrenciler savunularını sunarken bilerek veya bilmeyerek mantıksal hatalara başvurabilirler. Mantıksal hataların rolü, sağlam ve geçerli savunular önermede kritik ve çok önemli olsa da çoğu yazma bağlamında bunlara neredeyse hiç odaklanılmıyor ya da çok nadiren odaklanılıyor. Üstelik, öğrenciler için önemli bir 21. yüzyıl becerisi olan eleştirel düşünme hem kişinin kendi savunularında hem de okudukları, gördükleri ve dinledikleri kaynaklardaki yanlış iddiaları tespit edebilmeleriyle yakından ilgilidir. Mantıksal hataların farkında olmak ve bunlarla ilgili bilgiye sahip olmak daha eleştirel bir yaklaşımlarının olmasına ve maruz kaldıkları bilgileri filtrelemelerine yardımcı olabilir. Bu yüzden, öğrencilerin mantıksal hatalar hakkındaki farkındalığını artırmak ve savunularını hatasız bir şekilde sunmaları için onlara rehberlik etmek adına mantıksal hatalara açıkça odaklanmaya ihtiyaç vardır. Bu nedenle, bu çalışma, üniversite öğrencilerinin tartışma temelli metinlerinde bulunan mantıksal hatalara ve bunların düzeltici öğretmen geribildirim yoluyla nasıl ortadan kaldırılacağına odaklanmayı amaçlamaktadır. İçeriğin geliştirilmesi, düzenlenmesi, dil kullanımı vb. gibi yazmanın farklı yönleri üzerine yapılan çalışmaların çeşitliliğine rağmen, özellikle tartışmacı metinlerde yaygın olarak bulunan mantıksal hataları hedefleyen çok az çalışma vardır. Öğrenci metinlerindeki farklı mantıksal hata türlerinin sıklığını tanımlayan birkaç çalışma vardır. Ancak bunlar, farkındalığı artırmak için mantıksal hatalara açıkça odaklanmanın gerekliliğini kabul etmelerine rağmen, düzeltici geri bildirim yoluyla hatalı

iddiaları azaltmaya çalışmamaktadır. Bu çalışma, öğretmen tarafından verilen geribildirim ve açıktan öğretimin tartışma temelli metinlerdeki mantıksal hataların varlığını nasıl etkilediğine ışık tutması açısından önemlidir. Bu amaçla, Türkiye'deki bir devlet üniversitesinde akademik amaçlı İngilizce öğrenmeye odaklanan; zorunlu bir İngilizce dersini alan 43 öğrenci çalışmaya katılmıştır. Ön deneysel bir tasarım benimsenmiş ve ön test ve son test sonuçları ile tartışma temelli metinlerinin ilk taslakları ve ikinci taslakları arasındaki farklardan, argümanlarındaki mantıksal hataları ortadan kaldırmada öğretmenin düzeltici geribildiriminin bir rolü olup olmadığını tespit etmek için bir deney grubu incelenmiştir. Veri toplamak için karma yöntem yaklaşımı izlenmiştir. Nitel veriler, öğrenci yazıları ve bireysel görüşmelerle toplanmıştır. Bu çalışmada, mantıksal hatalara ilişkin nitel veriler dört yazıdan toplanmıştır. İlk üç yazı için süreç odaklı yazma yaklaşımı izlenip ilk yazı ön test, son yazı son test olarak kullanılmıştır. Öğrencilerin metinlerindeki mevcut mantıksal hataları belirlemek için mantıksal hata yaklaşımı ve içerik analizi kullanılmıştır. Her bir yazma görevinden ve her taslaktan elde edilen sonuçlar MS Microsoft Excel'de tablo haline getirilip nitel veriler SPSS-22 kullanılarak nicelleştirmek için analiz edilmiştir. Sonuçlar, öğretmen tarafından düzeltici geri bildirimi verdikten sonra sayılarında azalma görülmesine rağmen, bazı mantıksal hata türlerinin diğerlerine göre daha yaygın olduğunu ve öğrencilerin metinlerinde daha sık görülmeye devam ettiğini göstermiştir. Ayrıca, öğretmenlerin düzeltici geribildiriminin öğrencilerin tartışma temelli metinlerindeki mantıksal hataları ortadan kaldırmada önemli bir rolü olduğu sonuçlarla ortaya çıkmıştır. Uygulama bittikten sonra, deneyimlerini daha derinlemesine kavrayabilmek adına tutumlarının araştırıldığı 13 gönüllü öğrenci ile bireysel yarı yapılandırılmış görüşmeler yapılarak daha fazla nitel veri elde edilmiştir. Görüşmeler, içerik analizi kullanılarak ilgili kodları, kategorileri ve temaları belirlemek için tamamen yazıya dökülüp analiz edilmiştir. Görüşmelerin sonuçları, öğrencilerin metinlerindeki mantıksal hatalara açıkça odaklanmayı faydalı bulduklarını göstermiş ve öğrenciler mantıksal hatalar hakkında farkındalık kazanma, argümanlarına daha eleştirel bir yaklaşıma sahip olma, yazılarının kalitesini artırmak gibi uygulamanın faydalarına değinmişlerdir. Öğrenciler, ayrıca çalışmada kullanılan öğrenme ve öğretme materyaller, süreç odaklı yazma yaklaşımı ve kodlanmış geribildirim hakkında çoğunlukla olumlu görüşler paylaşmışlardır. Sonuç olarak, bu çalışma, öğretmenlerin düzeltici geribildirimi ile mantıksal hatalara açık bir şekilde odaklanmanın rolünü göstererek literatüre katkıda bulunmaktadır. Ayrıca, İngilizce öğretimi ile özellikle yazma dersleri için çıkarılabilecek sonuçlar ve öneriler paylaşılmaktadır.

Anahtar kelimeler : Mantıksal hatalar, akademik yazma, tartışma temelli metin yazma, öğretmen düzeltici geri bildirimi, kodlanmış geri bildirim, süreç odaklı yazma
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GRADUATE SCHOOL OF EDUCATIONAL SCIENCES

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ABSTRACT

Writing skill is an important component of English language teaching. In addition to providing learning opportunities to improve students' general writing abilities, teaching the conventions of academic writing is also significant to better prepare the learners for their academic lives. In teaching academic writing, argumentative writing stands out to be crucial since it allows students to discuss an issue from a variety of aspects and convince readers by proposing evidence to support their claims and arguments. Yet, students may resort to logical fallacies knowingly or unknowingly while proposing their arguments. Though the role of logical fallacies is critical and crucial in proposing sound and valid arguments, there is almost no or very rare focus on them in most of the writing contexts. Moreover, critical thinking, which is a significant 21st century skill for learners, is closely related to being able to detect fallacious claims in both one's own arguments and in the sources that they read, see, and listen to. Having awareness and knowledge of logical fallacies could help students have a more critical approach and filter the information they are exposed to. Therefore, there is a need to focus explicitly on logical fallacies to raise students' awareness and guide them to formulate their arguments in a fallacy-free manner. Thereby, this study aims to focus on the logical fallacies found in university students' argumentative essays and how to reduce them through teacher corrective feedback. Despite the variety of studies on diverse aspects of writing such as the development of content, organization, language use, etc., there is a scarcity of studies specifically targeting logical fallacies which are commonly found in especially argumentative texts. There are several studies that describe the frequency of different types of logical fallacies in student essays. Yet, they do not attempt to decrease the fallacious claims through corrective feedback despite acknowledging the necessity of explicit instruction on logical fallacies to raise awareness. This study is significant since it sheds light on how feedback given by the teacher and explicit instruction influence the

presence of logical fallacies in argumentative essays. To this end, 43 students taking a must English course, the focus of which is learning English for academic purposes, at a state university in Turkey participated in the study. A pre-experimental design was adopted and there was only the experimental group whose pre-test and post-test results as well as the differences between the first drafts and second drafts of their argumentative essays were utilized to detect whether teacher correct feedback had a role in reducing logical fallacies in their arguments. In order to collect data, a mixed method approach was followed. Qualitative data was collected through student writings and individual interviews. In this study, qualitative data about logical fallacies was collected from four writing tasks. A process writing approach was followed for the first three writings; the very first writing was the pre-test and the last writing task was utilized as the post-test. A fallacy approach and content analysis were used to identify the existing logical fallacies in the essays. The results obtained from each writing task and each draft were tabulated on MS Microsoft Excel and analyzed to quantify the qualitative data by using SPSS-22. The results indicated that some types of logical fallacies were more common compared to the others and continued to be more frequent in the students' essays although a decrease in their number was observed after giving teacher corrective feedback. Moreover, it was revealed by the results that teacher corrective feedback had a significant role in reducing the logical fallacies in the students' argumentative essays. Further qualitative data was obtained by conducting individual semi-structured interviews with 13 volunteering students after the treatment was over to probe their attitudes in order to gain a deeper insight into their experiences. The interviews were fully transcribed and analyzed to determine the relevant codes, categories, and themes using content analysis. The results of the interviews illustrated that the learners found it to be quite useful to explicitly focus on the logical fallacies in their essays and referred to certain benefits of the treatment including gaining awareness about logical fallacies, having a more critical approach towards their arguments, and improving the quality of their writings. The learners also mostly shared positive views about the learning and teaching materials utilized in the study, process writing approach, and coded feedback. Consequently, this study contributes to the literature by showing the role of an explicit focus on logical fallacies through teacher corrective feedback. Furthermore, the implications as well as suggestions for English language teaching and especially writing classes are shared.

Key words : Logical fallacies, academic writing, argumentative essay writing, teacher corrective feedback, coded feedback, process writing
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LIST OF ABBREVIATIONS

APA	American Psychological Association
EAP	English for Academic Purposes
EFL	English as a Foreign Language
ELT	English Language Teaching
ESL	English as a Second Language
L1	First Language
L2	Second Language
S	Student
SLA	Second Language Acquisition
SPSS	Statistical Package for Social Sciences
W	Writing
WCF	Written Corrective Feedback
WT	Writing Task

CHAPTER I

INTRODUCTION

In this chapter, the general scope of the study is introduced. To this end, this section entails information related to the background of the study, statement of the problem, aim of the study, significance of the study, assumptions, hypotheses, limitations, and operational definitions.

1.1. Background to the Study

Writing is a skill that differs from the other skills in that it is commonly a more effortful and complex ability compared to the other skills. Students usually need the guidance of the teachers in handling the challenges of writing and also are required to apply certain individual strategies to succeed. Moreover, in many settings, especially before tertiary education, writing can be a neglected skill. Therefore, when students start their university education, they may have challenges in terms of expressing themselves in written production. Additionally, not having sound knowledge of the rules and conventions of writing in their mother tongue could make it even harder for students to comprehend the conventions of writing in another language.

The issue may become more complicated when it comes to academic writing. Students mostly write opinion paragraphs where they are expected to express their own opinions without needing to refer to outside sources to support their claims in preparatory schools. The focus is more on personalizing and giving details and examples from their own lives without being required to justify their views and convince readers. Yet, when they start to study in their departments, they usually take one or two English courses which concentrate on academic English and they are exposed to the conventions of academic writing. There may be a sudden change in the expectations when they are required to produce essays based

on certain assigned sources by referring to the ideas in them and personalizing when needed or asked to do so. Therefore, especially when they first learn the conventions of academic writing, they may have difficulty in changing their habits about writing opinion paragraphs and sounding more academic in their texts.

Indah and Kusuma (2015) assert that the 3R basic literacy, namely reading, writing, and arithmetic are not adequate in today's conditions. 4R basic competences, with the addition of reasoning to the aforementioned competences, are needed for the learners' economic, social, and cultural maintenance. When the target outcomes of tertiary education are considered, fostering critical and innovative thinking is emphasized especially at high-stake universities. One way to measure critical thinking is through writing, especially argumentative essays, in which claims are produced. As suggested by Crasswell (2005), learners need to approach the information in a critical way to produce a well-grounded essay. To do so, learners must expand their knowledge of different topics not to produce fallacious sentences in their argumentative essays as topic familiarity is a factor in producing less fallacious claims (Indah, 2017).

In this study, the rhetorical analysis of logical fallacies which are observed in tertiary level students' claims in argumentative essays is the main focus. Assessing rhetoric encompasses certain aspects, logic being one of them. Dowden (2010) clarifies the assessment of logic as asking certain questions to evaluate the claims in terms of being sound or unsound. Logical fallacies are closely related to one of the most significant skills for the learners of the 21st century, which is critical thinking. The existence of a fallacy makes the argument an unsound one. Therefore, a critical thinker should have the ability to determine the claims which are written in a fallacious manner.

Regarding writing skill, a considerable number of students may tend to use a foreign language just for the sake of practicing linguistic structures they have learnt. This approach could also be supported and encouraged by some writing teachers and the emphasis may usually be placed on the accurate and appropriate use of the language without fully taking the audience into consideration. However, it should be remembered that one of the primary purposes of a language is to communicate with others. Similar to speaking, one usually attempts to convey a message to the other person in a written text; yet, students may ignore this objective and concentrate rather on producing linguistically accurate sentences. Consequently, a limited focus on the audience as well as how the arguments are presented and the messages are conveyed could cause students to commit logical fallacies.

Though the evaluation of content may find its own place in most of the writing rubrics, the variety of content-related aspects may not be well reflected in the description of the content aspect in writing rubrics or the expectations of a successful content may be quite limited or general. When writing rubrics are considered, content aspect usually entails addressing the writing prompt appropriately, the inclusion of relevant, supported, and extended ideas as well as the sufficient development of the proposed ideas. Yet, despite the fact that such descriptions could actually be related to avoiding logical fallacies, there is usually almost no marker to warn students for presenting fallacy-free arguments and supporting them in an acceptable manner. It almost seems as if unsound and fallacious claims could be acceptable so long as students make their ideas detailed and extended. Therefore, there is a need to refer to logical fallacies in writing rubrics and focus explicitly on them in writing classes to raise students' awareness. In line with this need, it is also essential to have an explicit focus on logical fallacies in writing classes.

1.2. Statement of the Problem

The students who pass the proficiency exam and start to study in their departments are usually introduced to academic writing and its conventions by taking English courses in which the focus is on improving academic writing skills. Since students mostly write opinion paragraphs or essays in which they are asked to explain their personal opinions in response to given prompts when they study at preparatory school, academic writing is usually a completely new and unfamiliar genre to them when they start to take such courses. While trying to follow the rules of academic writing and change or adapt their habits of writing opinion paragraphs or essays, learners may tend to experience certain difficulties. One of the challenges observed is related to supporting their arguments in their essays in a logical way that is free of fallacies.

In writing classes, there is usually a tendency to improve learners' language accuracy and appropriacy, which may indicate that a foreign language is commonly regarded as a way of using the language rather than being the means of communication between the writer and the reader. Consequently, teacher corrective feedback is usually targeted towards the problems related to language or organization mistakes. The content of a student's text is also evaluated, but it may not be the priority when giving feedback. The specific content-related problems may not be highlighted or ignored on purpose especially if the learner already struggles with language use.

Writing an argumentative essay requires the students to support their claims soundly and base their arguments on logical grounds. When they fail to do that, their writing may suffer from logical fallacies which lead the reader to question the reliability of the claims made in the essay. When writing classes are considered, the focus is mostly on the development of content, logical organization of ideas and the use of academic language. Yet, in most contexts, students may have no notion of logical fallacies let alone receive feedback on the logical fallacies found in their written work. Therefore, learners' knowledge of logical fallacies may usually be superficial, which could prevent them from identifying and avoiding such errors of reasoning while they are writing their essays or afterwards.

1.3. Aim of the Study

The aim of this study is to practice offering guidance in logically balancing the train of thought that keeps the components of an essay in linear form marked by consistency of reasoning. This aim will be pursued by the implementation of a three-part writing program together with a fourth implementation as the product only and it lasts six weeks. The agenda contains write and receive feedback chains. Throughout the study, three argumentative essays will be written by the students and teacher corrective feedback will be given to the first drafts of the essays based on which the second drafts are written. For the fourth essay, no feedback is given since it is utilized as the post-test. The feedback will specifically be given on the logical fallacies in the first drafts and coded feedback is utilized for referring the students to the 16 types of logical fallacies that are targeted in the study. Ultimately, the researcher aims to detect whether the number of logical fallacies in students' argumentative essays could be reduced through teacher corrective feedback.

In this regard, the following research questions have been formulated to achieve the aim of the study:

1. What are the most frequent logical fallacies in students' essays?
2. Does teacher written corrective feedback contribute to reducing logical fallacies in students' essays?
3. What are the students' perceptions about the effect of teacher written corrective feedback they received on the logical fallacies in their essays?

1.4. Significance of the Study

Though there are some studies targeting argumentation in student-produced essays, the number of studies concerning the logical fallacies found in the student writings and the role of teacher corrective feedback in eliminating them is relatively lower to the researcher's knowledge. Additionally, the existing studies in English Language Teaching (ELT) literature are usually based on describing the most common types of logical fallacies or determining whether learners can identify the fallacious claims and explain what the problem is with how the claims are proposed (Alagözlü, 2007; Amornchai et al., 2015; Atai & Nasser, 2010; Bardakçı, 2010; Indah & Kusuma, 2015; Khoiri & Widiati, 2017; Song et al., 2017; Song & Sparks, 2017). In the available studies, the gradual development of the learners in terms of avoiding logical fallacies and fixing the erroneous claims based on teacher feedback is not targeted. Therefore, the findings of this study will contribute to the existing literature in terms of having a closer look at the logical fallacies in student essays and whether corrective teacher feedback contributes to decreasing their frequency.

1.5. Assumptions

The current study is based on certain assumptions. Initially, it is assumed that the participants are familiar with the conventions of academic writing and argumentative essay. The researcher will assume that students know how to logically organize paragraphs in an essay and the importance of using academic language while writing an academic text. Additionally, it is assumed that the learners know what to do while writing the second drafts as a requirement of process writing approach. The learners are also assumed to take part in the activities eagerly and spend an ample amount of effort to pay attention to avoiding proposing fallacious claims in the first drafts and fixing their fallacious claims in the second drafts based on the feedback they receive. Another assumption is related to responding to interview questions in an honest and sincere manner without feeling pressured to sound positive or negative. To this end, the researcher will remind each interviewee to share their earnest opinions and they would neither be evaluated nor judged based on what they have stated. In this way, the genuine feelings and attitudes of the learners regarding the treatment could be better discovered.

1.6. Hypotheses

Two hypotheses can be formulated for the study. Initially, it is hypothesized that the written corrective feedback given by the teacher on the students' argumentative essays has an impact on reducing the frequency of informal logical fallacies in students' essays over time. Furthermore, it is hypothesized that explicit instruction on fallacies and the teaching guide have a significant role in raising students' awareness of the types, causes, examples, and avoidance tips regarding the targeted logical fallacies.

1.7. Limitations

The present study accommodates certain limitations. Initially, as the data collected is context-dependent and the individualized views of a certain group of participants are analyzed, the research findings cannot be generalized to bigger and different groups or contexts. Yet, the design and the results of the study could be transferred to different settings. Similarly, the number of the participants was another limitation since the study was conducted with 43 students and only 13 volunteer students were interviewed. Another limitation of the study is that there was no control group and all the participants were the members of the experimental group who were exposed to the same treatment because of the possibility of losing an unexpected number of participants at certain points during the study. Due to the probable risk of ending up with a low number of students since they could suddenly withdraw from the course or stop attending it, the study was conducted by having only the experimental group to obtain more comprehensive results. Last but not least, as the study does not adopt a longitudinal approach owing to time constraints, whether students will continue to have logical fallacies in their work or will be better at detecting and avoiding them even before receiving corrective feedback over the months will not be able to be analyzed and evaluated.

1.8. Operational Definitions

The key terms in the study are defined below to have a common understanding between the researcher and the audience.

Argument: A claim with reasons that support it.

Claim: A statement that asserts something to be true though it has not been proven.

Conclusion: The claim of an argument based on the premises.

Emotive language: Words or phrases that are used to evoke certain feelings.

Error: A fallaciously made argument that may result from ignorance or carelessness.

Erroneous: Including a fallacy in the content of the argument.

Fallacy: An error in reasoning.

Formal fallacy: An argument that is erroneous due to its structure rather than its content.

Informal fallacy: An argument that is faulty due to the content of the premises or the conclusion.

Invalid argument: A deductive argument in which the truth of the conclusion is not ensured by the truth of the premises.

Proposal: An expression in a sentence or statement that is either true or false; or that can be believed, doubted, or denied.

Premise: Evidence or facts based on which the conclusion of an argument is derived.

Reason: Evidence, facts, or premises in an argument.

Sound argument: A valid argument that has true premises.

Statement: A sentence that could be true or false.

Teacher corrective feedback: The feedback given to the students by underlining their fallacious arguments and writing the relevant code of fallacy to refer the students to the teaching guide for correcting their fallacious arguments.

Teaching guide: The guide that includes the fallacies with their codes, the related explanations and examples, and certain tips as to how to avoid them.

Valid argument: An argument whose premises logically guarantee the truth of its conclusion.

Writing: A writing that could either be the 1st draft or the 2nd draft.

Writing task: Each writing assessment with the 1st draft and the 2nd draft.

Writing cycle: Writing the 1st draft, receiving feedback on logical fallacies, and writing the 2nd draft.



CHAPTER II

REVIEW OF LITERATURE

In the following review of literature, writing skill, approaches to writing, academic writing, argumentative writing, teacher corrective feedback, critical thinking in writing, and logical fallacies are elucidated. Furthermore, related studies about logical fallacies in ELT and different settings are included in the last part.

2.1. The Importance of Writing in Second Language Learning

Writing has usually been a skill which has received less attention compared to the other skills in the ELT curriculum despite its prominent function especially in terms of testing and ensuring that the targeted learning points have been accomplished by the learners. The National Governors Association Center for Best Practices and the Council of Chief State School Officers (2010) produced a report which mentions that writing is a principal way in the assertion and defense of arguments proposed by individuals, demonstrating what knowledge they possess about a certain topic as well as allowing them to convey their experiences, thoughts, feelings, and their imaginations. For the accomplishment of such objectives, it is further stated in the report that “students must devote significant time and effort to writing, producing numerous pieces over short and long-time frames throughout the year” (p. 5).

Writing also has a crucial role in the assessment of learning since teachers can utilize written products of students to check a variety of skills and sub-skills including comprehension, grammatical and lexical knowledge, and thinking skills. Applebee and Langer (2011) put forward that subject teachers are aware and appreciative of the role of writing in assessing students’ comprehension in their disciplines. Yet, there is one concern regarding teachers since many of them are not well-trained to teach writing skill in a proper and effective way.

In a study conducted by Graham (2008), many teachers were of the opinion that they were not well-prepared to teach writing effectively to their students. In the same study, approximately half of the teachers expressed that they had almost no preparation before they started to teach writing. As a consequence of the insufficiency of the focus given to the training of teachers, certain problems could occur in writing classes, which may even “kill the writer in the child” (Vygotsky, 2004, p. 52).

Writing has an indispensable and significant place in language learning. In the report “The Neglected ‘R’ - The Need for a Writing Revolution”, it is put forward by The National Commission on Writing in America’s Schools and Colleges that despite targeting the development of writing fluency as one of the principal objectives of education, in reality, the expectations regarding this objective does not seem to be satisfying with total success (Magrath, Ackerman, Branch, Bristow Jr., Shade, & Elliott, 2003). The commission further added that writing is a complex activity which requires intellectual activity rather than being merely about certain elements like grammar and punctuation. In this regard, writing cannot be thought as a means of showing what students know, but rather it can be a way of helping students figure out what they know. Namely, it could be inferred that “Writing is learning” (Magrath et al., 2003, p. 13). This makes writing integral to an academic career and due to dealing with a variety of writings tasks such as research papers, assignments, dissertations, journal articles, books etc., academicians are thought as writers (Cameron, Nairn, & Higgins, 2009). Consequently, writing is an essential skill to achieve academic success and this necessity is further encouraged by the requirements of the universities (Leki & Carson, 1994). To clarify, the obligation to write a thesis, a professional research paper, or a dissertation for the successful completion of the program in some university departments implicitly support the necessity and the role of writing in accomplishing academic success (Akcaoglu, 2011).

2.2. A Historical Perspective on the Teaching of Second Language Writing

Writing instruction has received a great deal of attention at tertiary level institutions over the years. Regarding the teaching of writing, Smith remarked that “the whole enterprise is beyond words-beyond conception” (1982, p. 27). Such daunting approaches may have had a role in leading to the proposal of numerous approaches to teaching writing, which eventually caused paradigm shifts in the field of language teaching. Product and process approaches to teaching writing have long dominated the writing instruction in English as a

Foreign Language (EFL) classroom. Yet, in recent years, genre approaches have also started to attract supporters (Gee, 1997; Tribble, 1996).

2.2.1. Product-Based Approaches to Writing

2.2.1.1. An Overview of Product-Based Approaches

Prior to 1970s, there was a greater focus on the final product of the written work rather than the writing process. The studies in this period commonly concentrated on proving that one grammar pattern was more efficient than the other, which empowered the belief that writing skill would improve by focusing the attention on usage, structure, or correct form. Zamel (1976) pointed out to the fact that the other elements such as the purpose, the process of producing a text, and the targeted audience received only little attention (as cited in Barut, 2012). Consequently, learning to write meant learning language structures and applying them to one's own text without getting feedback for revising it.

Pincas (1982a) offers an explicit depiction of product approaches to the teaching of writing. According to her, writing is mainly concerned about linguistic knowledge and the emphasis is on using vocabulary, syntax, and cohesive devices in an appropriate manner (Pincas, 1982b). She further states that there are basically four stages of how writing is learnt in product-based approaches: familiarization, controlled writing, guided writing, and free writing. In the familiarization stage, it is aimed to let students notice certain aspects of a given text. In the controlled and guided writing stages, the objective is to enable students to do practice about the targeted skills by giving more freedom increasingly until they become prepared for the final stage, which is free writing. Pincas views learning to write as “assisted imitation” and offers utilizing certain techniques such as substitution tables which require the learners to respond to a stimulus given by the teacher (1982a, p. 24). She also adds that “students should feel as if they are creating something of their own” (Pincas, 1982a, p. 110). Briefly, in product-based approaches, writing is thought to be primarily about linguistic knowledge and the outcome of imitation of input given through the texts provided by the teacher.

2.2.1.2. Controlled Composition

Prior to the mid 1960s, structural linguistics and behaviorist psychology were the two notions which mainly influenced second language writing (Silva, 1990). Structural linguistics emphasized speaking over other skills, which were simply regarded to be contributing to the reinforcement of the speaking skill (Leki, 2000). Yet, according to behaviorist psychology, learning occurred as a result of habit formation. Ultimately, controlled composition approach appeared as a consequence of merging these two notions.

Before the 1980s, the focus of the composition at university level and rhetoric was mainly on analyzing literature and the writing styles of the students, and achieving accuracy in syntax and lexis. The product was the main concern for the teaching and evaluation of student writing, which lacked any kind of explicit instruction to guide students towards achieving high-quality writing. In controlled composition, writing was viewed "as a product constructed from the writer's command of grammatical and lexical knowledge, and writing development is considered to be the result of imitating and manipulating models provided by the teacher" (Hyland, 2003, p. 3). Such an approach to writing limited students and prevented them from producing original and creative sentences in their writing. Students were mere practitioners of the given model texts and were studying the feature of a text through exercises. This model restricted the learning of writing to a habit formation process, in which the writer was responsible for manipulating the language structures and the reader acted as a proofreader or an editor of the sentences in terms of accuracy without paying attention to the quality of ideas. Although certain scholars pointed to the benefits of controlled composition, it was not embraced by all the second language writing scholars. As a result of the limitations and restrictions it had, a shift from a focus on grammatical accuracy and the product to a more flexible perspective in teaching writing with an emphasis on the writing process rather than the rhetorical structure and linguistic accuracy was observed (Hairstone, 1982, as cited in Hinkel, 2004).

2.2.1.3. Free Composition

Free composition is defined as "an original discourse created by the student about some given subject matter" (Erazmus, 1960, p. 25). This approach allows students to produce their own compositions in which content and fluency are addressed as different from controlled composition and students are allowed to write whatever comes to their mind freely (Paulston, 1972). In free composition, students need to possess a sufficient amount of knowledge on

the aspects of grammar, vocabulary, and organization to be able to produce a text as a response to a certain topic within a specific period of time (Bracy, 1971). Yet, free composition was criticized for “being time-consuming and subjective grading procedures, learning interference due to the frequency of student errors, and student and teacher frustration due to a lack of tangible signs of progress” (Dehghanpisheh, 1979, p. 512) and it was also not favorable by the teachers teaching lower levels of English.

2.2.1.4. Current-Traditional Rhetoric

Controlled composition and free composition stood as two ends of a continuum and as a result of an increasing awareness regarding EFL/ESL students’ needs, it was understood that writing did not mean producing grammatical sentences or giving students ultimate freedom. Therefore, there was a need to fill the gap between the aforementioned methods and the current-traditional rhetoric emerged as a bridge. Raimes notes that current-traditional rhetoric is “based on the principle that in different cultures people construct and organize their communication with each other in different ways” (1983, p. 8). The implication is that organizational patterns of the texts change across different languages and therefore they should be taught to the second or foreign language learners who lack knowledge regarding these varying patterns.

In its simple terms, contrastive rhetoric deals with the similarities and differences across cultures. Kaplan (1966) asserted that the knowledge of the linguistic patterns and rhetorical conventions of L1 are usually transferred to L2 writing, which results in interference (Connor, 2003). Contrastive rhetoric aimed at raising teachers’ awareness as to L1 influence in L2 students’ writing and became the center of attention in many studies (Panetta, 2001; Woolever, 2001). In this approach, paragraph and essay development by targeting logical structural features, namely introduction, body, conclusion, and organizational modes such as narration, exposition, or argumentation were the main foci (Silva, 1990). The type of exercises to reinforce this aim involved finding or writing appropriate topic sentences and supporting statements (Dehghanpisheh, 1979), putting the scrambled sentences in order, paragraph completion by writing or selecting appropriate sentences (Hyland, 2003), or addressing different language functions for achieving unity and coherence in compositions (Carpenter & Hunter, 1981). In a nutshell, the focus was on form and it was a dictated process in which the students read and analyzed a given model and applied it, which simplified the learning process to identifying, internalizing, and executing the prescribed patterns.

Consequently, this approach received criticisms for being linear and prescriptive (Silva, 1990) and overlooking the meaning and purpose of producing a piece of writing (Hyland, 2003).

2.2.2. Process-Based Approaches to Writing

Some early studies paved the way for a greater emphasis on the writing process as opposed to the old attitudes in favor of the written product (Coles, 1974; Elbow, 1973; Murray, 1972). With this new trend in ELT, students were able to discover their own potentials and skills, decide on which topics they want to write about as well as their own styles and strategies together with their teachers and friends through feedback. Such an approach to writing gave birth to a new pedagogy in which writing process was valued and student was at the center.

In the post 1980s era, the main focus of the prevalent L2 writing instruction method has been on the writing process just like the approach adopted for the teaching of L1 writing for the native speakers of English (Zamel, 1982). The influences of cognitive psychologists and linguists, especially Chomsky, were also observable in the style of composition as well as the effects on aspects of language and linguistics. A different approach to learning to write in which the development of the mental processes was stressed rather than attempting to produce perfect replicas of the given formal models. Product-based approaches to writing ignored the role of creative thinking, which was a part of process-based approaches, and therefore product writing became unfavorable by the proponents of creative thinking and writing.

The origins of process writing go back to L1 classroom experience with the purpose of discovering how L1 writers went about the writing task, how good writers wrote, and the distinguishing features of the good and bad writings. By understanding the mental processes of the good writers, it was hoped to help the poorer writers write in a better manner. To this end, adopting a process approach to teaching writing necessitates the teaching to be reorganized and grounded on the complex nature of the writing process rather than unrealistically assuming that the texts should first be planned coherently, then written based on the plan, and finally re-read and edited for achieving language accuracy.

According to Tribble, process approaches underscore the significance of "... writing activities which move learners from the generation of ideas and the collection of data through the publication of a finished text" (1996, p. 37). As opposed to product-based approaches,

process-based approaches view writing as mainly about linguistic skills like planning and drafting with less attention on linguistic knowledge. Similar to product-based approaches, a typical model in process-based approaches has four stages: prewriting, composing/drafting, revising, and editing (Tribble, 1996). Yet, rather than being a linear one, this is a cyclical process and learners may revisit the previous stages even after revising or editing their work. Additionally, Hedge (1988) proposes that in pre-writing activities, the focus should be on the audience, the generation of ideas, the organization of the text, and the purpose of the text. In process-based approaches, the role of a teacher is being a facilitator during the writing process and there is less emphasis on providing input or stimulus (Badger & White, 2000). To further clarify, they refer to an analogy between the babies and young children, and second language learners. Second language learners are thought to develop writing skills rather than consciously learning them in the same way as babies and young children acquire their native language rather than learning it explicitly. Teachers strive to unlock the students' potential. Succinctly, in process-based approaches, writing is primarily about practicing linguistic skills and it is an unconscious process that occurs as a result of exercising writing skills facilitated by the teacher.

2.2.3. Genre Approaches

Genre approaches are relatively new to the field of ELT, yet they share certain similarities with product-based approaches. In some senses, they could be referred to as an extension of product-based approaches (Badger & White, 2000). Similar to product approaches, writing is primarily considered linguistic, but the social context in which one produces a piece of writing is also emphasized and writing varies depending on the social context differing from product approaches. Considering the range of writing types including sales letters, research articles, or reports which are produced in different situations (Flowerdew, 1993), the writing syllabus is devised in light of the fact that not all learners will have to perform in all social contexts. In genre approaches, the key principle is 'purpose' since different genres are utilized and preferred to accomplish differing targets. In Swales' definition, a genre is "... a class of communicative events, the members of which share some set of communicative purposes" (1990, p. 58). Several other features like the subject matter, the relationship between the writer and the reader, and the organization pattern also influence genres.

When it comes to writing development, it is possible to observe certain similarities between product approaches and genre approaches. Cope and Kalantzis (1993) offer a wheel model

of genre literacy which consists of three stages: modelling the target genre in which students are introduced to samples of the specific genre they are expected to produce, constructing a text with a mutual contribution by the students and the teacher, and eventually, allowing learners to produce their own texts independently. Dudley-Evans (1997) also proposes three stages in writing following a genre approach. Initially, learners are introduced to a sample model of a specific genre and it is analyzed. Following this, learners are given the opportunity to immerse in the related language items through certain exercises. In the final stage, learners independently produce a short text of their own. In this sense, genre approaches resemble product approaches. To recapitulate, in genre approaches, writing is regarded to be connected with linguistic knowledge as well as a social purpose, and it develops as a result of analyzing and imitating the input provided through model texts by the teacher.

2.3. Academic Writing

Written outputs produced through academic writing are essential for academics in terms of determining a long and successful career (Antonioua & Moriartyb, 2008; McGrail, Rickard, & Jones, 2006). However, despite the fact that it is quite important to have a successful academic career, there are many graduates who are not well-prepared for academic writing tasks due to their university education. This results in a need to take a closer look at how university students learn academic writing (Akcaoglu, 2011). Native and non-native students have different challenges when learning academic writing. The abundance of resources in terms of both linguistic skills and the knowledge of writing rules and conventions usually enable native students to have greater success in academic writing. Yet, non-native students are usually at a disadvantage due to certain challenges like trying to find the right word or idiom to use even if they may have a good vocabulary repertoire (Vifansi, 2002).

Additionally, the point of views of different faculties related to academic writing has also attracted the attention of some researchers. Casanave and Hubbard (1992) stated that humanities and social science faculties put more emphasis on academic writing compared to science and technology faculties regarding such issues as content development, organization, and appropriacy. Writing courses also have an important role in preventing the issues of plagiarism and assisting graduate students to tackle the challenges they might experience while writing (Anderson, 2009). Yet, for some researchers, certain problems can be attributed to the writing courses offered at the undergraduate level. In such courses, mostly

non-academic genres aiming at achieving more daily and general written communication are dealt with rather than academic writing. Consequently, graduate students become unsuccessful in making transitions and connecting paragraphs while producing academic texts (Gürel, 2010).

Vifansi (2002) further adds that academic writing also requires the students to write in a reader-based manner rather than a writer-based one, follow an expository writing instead of a personal writing and switch from telling knowledge to transforming knowledge. This means that in the writing process, several different factors come into play such as the writer, the professor, the language and the source text (Jiang, 2001). Regarding this issue, Köse and Şahin (2008) found out in their study that the students had difficulty in expressing their ideas even when they were writing in their L1. As the reason of this challenge, they pointed to the fact that the students were not provided with the essential skills to write during their primary and secondary education.

2.3.1. Academic Writing in English Language

As a natural outcome of English being the common language for the spread of academic knowledge and the major language for the convey and dissemination of research findings, it is essential for students to gain an adequate understanding of and expertise in the relevant conventions of academic written discourses in English in order to comprehend the subject matters in their disciplines and accomplish success in the world of academia (Graddol, 1997). Accordingly, this growth of English language has had a universal impact requiring scholars to gain competence in a foreign language as a professional imperative (Hyland & Hamp-Lyons, 2002).

The widespread acceptance of English as the major language for academic and scientific inquiry has overshadowed the other languages. Hyland (2006) stated that English was the language of 90 per cent of the journal literature and the most prominent and cited journals. Consequently, it became an urgent need for most university students across the world to gain fluency in the right English in a certain discipline even for the native speakers of the language since they were also subject to institutional expectations and international norms (Hyland & Hamp-Lyons, 2002). Hinkel (2004) emphasizes the significance of effective and accurate use of language stating that even if the writer proposes an outstanding idea, no good outcomes are produced if the language suffers and lacks clarity.

Buckingham (2008) conducted a study in which she attempted to reveal the perceptions of Turkish scholars attached to humanities faculty of a prestigious Turkish university regarding their discipline-specific English language writing skills. The interviewers articulated that the obligation to publish their work in English put them under pressure and the Turkish written discourse was not well-respected. They further added that since almost no Turkish journals could find place in the international journal citation index, there were no other options in social sciences. Though the professional and institutional expectations and imperatives of academics are similar to the countries in which English is the medium of communication, clearly, a non-native speaker of English is at a more disadvantaged position compared to a native speaker in writing academic papers due to the challenges involved and consuming more time. In this vein, Ferguson (2007) states that the role of linguistic factors in negotiation in the academia serves as an obvious impediment. Similarly, many scholars address this issue and agree that the value of linguistic skills should not be ignored (Hinkel, 2004; Hyland, 2006; Swales & Feak, 2004).

2.3.2. Hedging in Academic Texts

Hedging has a crucial role in formal writing. Hedges can simply be defined as the linguistic devices that indicate uncertainty, hesitation, indirectness, and politeness. Hyland observes that when a writer puts forward a claim, the writer is responsible for making the statement “cautiously, accurately and modestly to meet community expectations and to gain acceptance for their statements” (1996, p. 477). Lakoff pioneered the concept of hedging (1972). He notes that “natural language sentences are very often neither true, nor false, nor nonsensical, but rather true to a certain extent and false to a certain extent, true in certain respects and false in other respects” and describes hedges as “words whose job is to make things more or less fuzzy” (1972, p. 183).

Swales (1990) describes hedges as rhetorical devices that are used to indicate modesty, honesty, and caution in one’s statements and tactfully leave some room for counter-arguments and developments in fields filled with other researchers. In a similar vein, Salager-Meyer introduces hedges as “the product of a mental attitude” and entails three dimensions which are “purposive fuzziness and vagueness as a threat-minimizing strategy, the author’s modesty or unwillingness of reaching absolute accuracy and of quantifying all the phenomena under observation” (1994, p. 153). If the writer is overly assertive in presenting his or her arguments, then he or she becomes vulnerable to attack by the

opponents. Consequently, Myers (1989) suggests that writers could be urged to introduce themselves as “the humble servants of the discipline” (p. 5).

Hedging devices can come in various forms such as adjectives (e.g., apparent and essential), adverbs (e.g., probably, frequently, and rarely etc.), and modal verbs (e.g., may, might, need to, can etc.). Salager-Meyer (1994, p. 154) provides a detailed list and offers five categories of hedging as summarized in the following table:

Table 1

The Taxonomy of Hedges

The Taxonomy of Hedges	Description of the Hedges
1. Shields	- all modal verbs expressing possibility, semi auxiliaries (<i>e.g., to appear, to seem</i>) - probability adverbs (<i>e.g., probably, likely</i>) - epistemic verbs (<i>e.g., suggest, speculate</i>)
2. Approximators	words or phrases that express quantity, degree, frequency, and time (<i>e.g., approximately, roughly, somewhat, quite, often, occasionally</i>)
3. Author's personal doubt and direct involvement	expressions that show the subjective views of the writer (<i>e.g., I believe, to our knowledge, it is our view that</i>)
4. Emotionally-charged intensifiers	comment words that show the writer's reaction (<i>e.g., extremely difficult/interesting, dishearteningly weak, of particular importance, particularly encouraging, unexpectedly, surprisingly</i>)
5. Compound hedges	strings of hedges (<i>e.g., may suggest, could be suggested, would seem likely, seems reasonable to assume, would seem somewhat unlikely</i>)

Salager-Meyer, F. (1994). Hedging and textual communicative function in medical English written discourse. *English for Specific Purposes*, 13(2), p. 154.

Hyland and Milton (1997) claim that both L1 and L2 learners seem to suffer from maintaining an acceptable and appropriate level of caution and certainty in their self-reports. Furthermore, though hedges are prevalent and have a crucial role in academic texts, textbooks used in EFL and English for Academic Purposes (EAP) settings infrequently address hedges (Hyland, 1998). Channell (1994) observes that L2 learners need to be aware of the role of hedging in making their claims in such a way that reflects caution and politeness, which means they need to notice politeness strategies used by the other writers and produce their texts in an appropriate manner. In line with this need, Hyland (2000) found in his study that some students were not even aware of the hedging devices as readers and those who noticed them were not able to point to the hedges when they were asked about the certainty of the writer related to the given statement.

Rhetorical strategies are culture dependent and such aspects of academic writing as hedging language, claims or generalizations are not universally determined features of the written academic discourse; therefore, EFL learners in an academic community must be explicitly and persistently taught on such aspects. Ventola (1997) comments on this issue and claims that EAP students have difficulties about hedging techniques, which could be due to the fact that hedging is not part of their L1 discourse or they are required to learn various techniques in English language as non-native speakers of it. Hinkel (2004) also refers to the significance of focused instruction on hedging techniques and notes that with the help of an explicit focus on such language, learners realize that exaggerations or overstatements are not acceptable in formal academic discourse unlike informal discourse.

2.4. The Definition of Argumentation

Different definitions have been proposed for arguing in education ranging from a way of thinking (Kuhn, 2010), a way of teaching (Driver, Newton, & Osborne, 2000), a way of learning (Asterhan & Schwarz, 2009), or a way of collaborating (Felton et al., 2015). Though the definitions and perceptions may vary, its significant role in enhancing the critical and democratic thinking of individuals has long been underscored in the literature (Kuhn, 2010). There has been a growing interest among scholars in implementing argumentative tasks in classroom, which contribute to enhancing two crucial dimensions of learning: the students' potential to engage in arguments in various learning contexts and learn different curricular contents.

Argumentation is a dialogical activity which is based on two principles that are beliefs and defeasibility (van Eemeren & Grootendorst, 2004). Arguments are grounded on commonly shared premises such as values, presumptive causal relations, and commonly accepted definitions. Due to the “endoxical nature of the premises, arguments are characteristically defeasible when one of the premises is challenged or refuted” (Nussbaum & Edwards, 2011, p. 444). Consequently, argumentation becomes a dialogical and dialectical practice of tackling a matter by presenting reasons with the aim to support it while also attacking a notion. In this process, the implicit dimension of discourse is reconstructed by the interlocutors by recognizing weak points and defending them utilizing diverse types of support (Walton, 2006). As a consequence of this analytical and dialectical activity, the background beliefs of the interlocutors could be revealed and amended. Furthermore, it boosts interlocutors' reasoning skills and their capacity to utilize existing evidence or

knowledge to defend a viewpoint (Baker, 2009). Due to the connection between background beliefs and arguments, and the defeasible characteristic of argumentative reasoning, argumentation is crucial in disclosing and dealing with background knowledge as well as misconceptions (Rapanta & Macagno, 2016).

Argumentation can be mentioned among the principal means for social construction of knowledge and in many studies, the role of argumentation in teaching and learning has been stressed (Erduran, Simon, & Osborne, 2004; Sandoval & Millwood, 2005). Teaching is a kind of argumentative dialogue, since it targets amending and enhancing students' "private understanding" by demonstrating its limits and constructing the new understanding based on it (Simons, Morreale, & Gronbeck, 2011, p. 7). Arguments could be useful instruments in accomplishing this aim since they can reveal the background beliefs of students and following argumentative exchanges could be built on this background knowledge and prior beliefs. Consequently, this makes argumentation activity crucial in terms of boosting students' critical thinking skills.

Argumentation is a twofold notion, which either refers to an outcome of a written or spoken discourse or the process of offering opinions on a matter backed by reasons in order to convince an interlocutor in a dialogical manner (Rapanta & Macagno, 2016). The traditional purpose of argumentation is acknowledged to be persuading an audience, yet argumentative dialogues entail more than the purpose of persuasion. Decision-making, negotiation, information seeking, inquiry, and eristic dialogues are some dialogue types that have an argumentative dimension (Walton & Krabbe, 1995).

Argumentation is a social and dialogic reasoning activity in which contributors could adopt dissimilar stances and alter their opinions during the course of the speech (van Eemeren, Grootendorst, & Henkemans, 1996). Hillocks (2002) criticizes traditional classroom instruction for emphasizing "basic written composition, the use of formal templates, and neglecting social aspects essential to sustain the development of sophisticated argumentation skills" (Kuhn & Crowell, 2011, pp. 84-85). To elaborate on this issue, a variety of empirical studies on argumentative writing (Nussbaum & Kardash, 2005; Persky, Daane, & Jin, 2003) reveal that despite making claims with supporting reasons, students are unable to integrate appropriate evidence or contemplate alternative viewpoints and evaluate arguments proposed by others in a critical manner. Song and Sparks (2017) further add that due to the typical nature of argument assessment tasks which only require students to respond to a given simple prompt, teachers usually have little instructional information about component

skills which may have a role in the low achievement of the students since the evaluation is based solely on the final product.

2.5. Arguments

Ramage, Bean, and Johnson (2010) clarify the concept of arguing as being an activity that fosters creativity, productivity, inquiry, and critical thinking rather than an expression of anger and hostility as implied by its connotations. Arguments can be explicit or implicit. An explicit argument clearly makes its claim and it is supported through evidence and reasons. On the contrary, an implicit argument may not resemble an argument in most cases. It can come in the form of a bulletin board, a cartoon, a poster, or a slogan on a T-shirt. Yet, similar to an explicit argument, it aims at convincing its audience to support a certain point of view. An argument can be one-sided (i.e., only the writer's own position is given without referring and responding to alternative views), multi-sided (i.e., the writer's position is accompanied by the mention of possible alternative views and responses to them), or dialogic (i.e., the writer shows himself or herself as someone who is uncertain and searching for answers and the audience is regarded as a partner in the dialogical activity in which the writer tries to find a common ground that leads to the solution of a problem). The features of a good argument are summarized by Ramage et al. (2010, pp. 10-13) as follows:

- (i) Argument requires justification of its claims.
- (ii) Argument is both a process and a product.
- (iii) Argument combines truth seeking and persuasion.

2.5.1. The Structure of an Argument

A philosophical and sound argument encompasses two parts: the premises and the conclusion. The premises are basically the evidence given to support the conclusion and the conclusion is the claim supported by the premises. Missimer (1990) explains the structure of an argument with a house analogy as in the following:

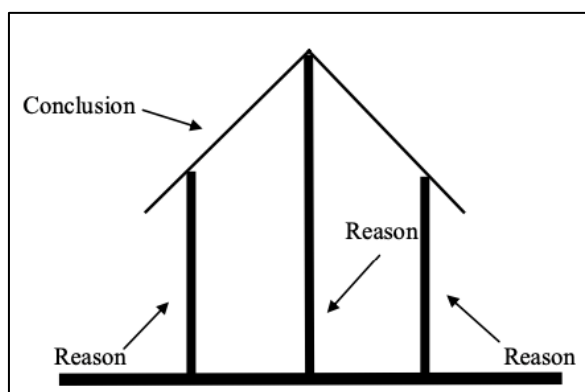


Figure 1. The structure of an argument (Missimer, C. A. (1990). *Good arguments: An introduction to critical thinking*. Englewood Cliffs, NJ: Prentice Hall, p. 18)

As it is seen in Figure 1, the roof is firmly supported by the posts. The roof is the conclusion and the posts are the reasons that lead to the specific conclusion. A conclusion is also called as an inference. Cooper and Patton define an inference as “a conclusion about the unknown made on the basis of the known” (1993, p. 12). The reliability and validity of an inference is a major concern. Though some inferences could be quite reliable, some could be formulated based on insufficient evidence, often leading to various interpretations. Therefore, good writers need to be able to identify and notice the differences between inferences, facts, and judgements as well as assessing their own inferences in terms of being reliable. It is also crucial for the writer to present sound and logical evidence to support his/her views not to be easily challenged and refuted. For this purpose, in addition to using sources that readers will trust, Fulkerson (1996) offers STAR criteria to evaluate the persuasiveness of claims (pp. 44-53):

- Sufficiency: Is there enough evidence?
- Typicality: Is the chosen evidence representative and typical?
- Accuracy: Is the evidence accurate and up-to-date?
- Relevance: Is the evidence relevant to the claim?

Ramage et al. (2010) also examine the kinds of evidence with their strengths and weaknesses. They state that one source of evidence could be personal experience. Personal experiences are criticized for being insufficient, atypical, and not scientifically validated despite allowing readers to identify with the writer. The writer can also be blamed for committing hasty generalization. Evidence can also come from one’s own observations and field research. Yet, despite giving a sense of scientific credibility, such data are not fully acceptable by skeptics

due to the possible flaws in how observations are made and the insufficiency, inaccuracy, and nontypicality of data. Data can also come from interviews, surveys, questionnaires. Yet, despite their possible contribution to increasing scientific feel of the arguments, they are also approached skeptically due to the research methodology, design of the questionnaire, and the typicality of the participants. Additionally, one can obtain data to support his or her views from library or Internet research. Research data may come in the form of quotations, facts, examples, testimony, statistical data summaries or findings of research, etc. Nevertheless, despite being strong especially if the sources are appreciated by the audience, such data may also be approached doubtfully by the sceptics due to their typicality, sufficiency, and relevance. Finally, evidence may come in the form of hypothetical examples, cases, and scenarios. Nonetheless, despite having strong imaginative appeal, such evidence may also be approached suspiciously due to the possibility of being implausible.

An argument can only be formulated if it has at least one premise and a conclusion (Cooper & Patton, 1993). Certain indicator words, transition signals, or conjunctions that demonstrate the logical relationships existing between ideas have a significant role in assisting readers to distinguish arguments and comprehend them more clearly. Some of the most common premise indicators are “because, since, as, because of, due to, owing to” and “so, therefore, thus, as a result, consequently, hence” are among the most prevalent conclusion indicators. Moreover, a variety of indicators could be used such as “and, but, however” etc. to connect premises.

2.5.2. Deductive Reasoning and Inductive Reasoning

Deductive reasoning is applied when the conclusion of a deductive argument, based on valid reasoning, is formed as a consequence of necessity from the premises. A very classical example of such reasoning is:

1. All men are mortal.
2. Socrates is a man.

Therefore, Socrates is mortal. (Cooper & Patton, 1993, p. 104)

When a causal link cannot be explained, inductive reasoning is applied. The conclusion of an argument is obtained with a certain degree of probability. Through inductive reasoning, one infers a conclusion based on the specific cases. Yet, due to the enormous number of variables that may be involved, one can only obtain probable truths rather than certain ones

as a result of inductive reasoning. Inductive reasoning could also lead to wrong conclusions and as a result one may commit post hoc fallacy and hasty generalization fallacies (Ramage et al., 2010). Cooper and Patton (1993, p. 105) give the following example about a man feeding the chicken every day in his life before eventually wringing its neck to clarify inductive reasoning:

1. He has fed me today.
2. He has fed me this next day.
3. He has fed me this day too.
4. He has fed me yet another day.

Conclusion: He will feed me tomorrow.

The chicken's prediction about being fed the following day is reasonable since such a prediction can easily be made based on its experience. However, it is very probable that it could actually be butchered the other day. It is clearly shown by this example that the conclusion of an inductive argument may in fact go far beyond the premises and lead to an unexpected or even wrong conclusion.

2.5.3. Truth, Validity and Soundness of Arguments

Validity is defined as the conclusion being followed from the premises of necessity in logic. So as to call an argument a successful deductive one, it is essential that its premises are acceptable or true. In other words, a deductive argument can be valid if the premises sufficiently support and explain one's argument. Cooper and Patton (1993, p. 120) point to two criteria for the acceptance of the conclusion of a deductive argument:

1. The structure of an argument must be valid - the conclusion must follow of necessity from the premises.
2. The premises must be acceptable.

When the premises of a deductive argument are acceptable and its structure is valid, it is labelled as a sound argument. To put it in other words, one would expect the conclusion not to be false if the structure of an argument is valid and the premises are acceptable. It is also worth mentioning at this point that validity and soundness are the terms used to evaluate an argument while the terms acceptable and unacceptable are used to classify individual statements. Therefore, it wouldn't be appropriate to call an argument as true or a premise as

valid. To clarify, Cooper and Patton (1993, pp. 120-121) illustrate sound and unsound arguments as follows:

Table 2

Sound and Unsound Arguments

A sound argument	Drift-net fishing kills dolphins. Mermaid Tuna uses drift-nets. Therefore, Mermaid Tuna kills dolphins.	The structure is valid and the premises are acceptable.
An unsound argument	All Spaniards are noisy. Jose is a Spaniard. Therefore, Jose is noisy.	One of the premises is unacceptable or false, but the structure is valid.
An unsound argument	All athletes are people. All basketball players are people. All basketball players are athletes.	The premises are true, but the structure is invalid.

Cooper, S., & Patton R. (1993). *Ergo: Thinking critically and writing logically*. New York: HarperCollins College.

2.6. Argumentative Writing

In written arguments, individuals are expected to articulate their personal viewpoints regarding controversial issues, validate their stances by offering reasons and evidence, and have a critical approach in responding to different standpoints (Ferretti, MacArthur, & Dowdy, 2000). Yet, students usually have trouble in integrating or clearly displaying critical argument elements, giving adequate evidence to support their arguments, and expressing their responses to alternative views (Ferretti, Lewis, & Andrews-Weckerly, 2009). According to Scardamalia and Bereiter (1986), when students are asked to revise their essays, they usually make corrections regarding the other aspects of the text than the meaning. Since such amendments are unrelated to the specific genre, they usually do not contribute to enhancing the quality of their written product. In a similar vein, a study conducted by Song and Lavigne (2006) revealed that the focus of the feedback from the students was on surface-level errors which included spelling, grammar, punctuation, and capitalization rather than proposing ways to improve the arguments with regards to claims, reasons, and supporting evidence.

Furthermore, students often accept the given information in an argument to be true instead of asking questions to critically evaluate it, which could actually unveil possible fallacies. Using quotations from books, referring to arguments heard on TV programs, integrating opinions posted on websites without checking the quality and correctness, making hasty generalizations merely based on their personal experiences are several instances of such behavior (Song, Deane, & Fowles, 2017). Students who fail to discern the reasonable and

fallacious arguments are also challenged in making the right decisions as to whether they must agree with or refuse an argument. In a similar vein, several studies have revealed the learning of evaluating arguments against a set of criteria to be useful for students (Nussbaum & Edwards, 2011; Song & Ferretti, 2013).

Walton (1996) asserts that an understanding of the underlying argumentation schemes is essential to determine whether an argument is misused or fallacious. These schemes are related to the connection between the message conveyed in the claim and the justifications that accompany it (van Eemeren, Grootendorst, & Henkemans, 2002; Walton, Reed, & Macagno, 2008). For instance, in the argument from expert opinion scheme, the writer refers to a so-called authority who has a supportive approach to the claim. The opponent could approach the claim by investigating whether the so-called authority is actually an expert in the specific field, by searching for proof that the utterances of the expert support the claim made, or inquiring whether the person's expertise is indeed significant (Walton, 1996). In another situation, when an example is proposed in supporting a claim, the opponent may ask such questions (Walton, 1996):

- (i) Is the example true?
- (ii) Is it a relevant example of the general statement we are being asked to believe?
- (iii) Is this example typical of the kinds of cases that the general statement covers?
- (iv) Are there any special circumstances that could undermine the generalization from this case to other cases?

Questions formed in such a critical manner could be of help in eliciting stronger counter-arguments (Song, Deane, & Fowles, 2017). Consequently, formulating scheme-relevant critical questions contributes to making distinctions between fallacious arguments and reasonable ones (van Eemeren & Grootendorst, 1992; Walton et al., 2008).

The four essential skills involved in argumentation are appeal building, taking a position, reasons and evidence, and framing a case (Song & Sparks, 2017). Providing evidence is crucial in the development and evaluation of ideas as it can be effective in supporting one's arguments while at the same time weakening the opposing views. Two essential changes are witnessed in how students alter their use of evidence as they gain sophisticated argumentation skills (Kuhn, Iordanou, Pease, & Wirkala, 2008). The first one is proposing reasons and evidence to support claims rather than offering them as personal beliefs without being supported by proof. The second change is about integrating evidence from both sides

instead of utilizing unjustified evidence and overrating the power of one's own evidence. In time, with the development of argumentation skills, students start to recognize the fact that every argument may not be logically valid or evidentially sound. Therefore, it is crucial for students to learn how to differentiate sound and unsound arguments by identifying logical fallacies (van Eemeren et al., 1996). Yet, Song et al. (2017) claim that these skills are challenging to have mastery over.

In Nussbaum and Edward (2011)'s study, 7th grade students were instructed on a simplified version of critical questions taken from Walton (1996) in view of argumentation scheme theory. It was revealed that the participants in the experiment could present more arguments which included both sides of an issue, paid attention to comparing values of both sides and offering solutions regarding these concerns as a result of the instruction. Similarly, in Song and Ferretti (2013)'s study, 30 college students were introduced to two common argumentation schemes; argument from consequences and argument from example, and were asked critical questions related to them. The study demonstrated that the students who were given instruction on critical thinking questions produced more quality essays, integrated more counterarguments, alternative viewpoints, and rebuttals compared to those who did not get any instruction on the schemes.

2.6.1. Three Types of Argument Structure

2.6.1.1. Classical Style

The pattern of classical argument is traced back to the persuasive speeches of Greek and Roman orators. In classical argumentation style, there are four main parts: the introduction, the presentation of the writer's position, the summary and critique of alternative views, and the conclusion. Ramage et al. summarize the components and contents of an argument with a classical style as in the following (2010, p. 61):

Table 3

A Summary of an Organization Plan for an Argument with a Classical Style

Introduction	Attention grabber Explanation of the issue and background information Writer's claim (thesis) Forecasting passage
Presentation of writer's position	Main body of the essay Presents and supports each reason in turn Each reason is tied to a value or belief held by the audience
Summary of opposing views	Summary of views differing from writer's (should be fair and complete)
Responding to opposing views	Refutes or concedes to opposing views Shows weaknesses in opposing views May concede to some strengths
Conclusion	Brings essay to closure Often sums up an argument Leaves strong last impression Often call for action or relates topic to a larger context of issues

Ramage, J. D., Bean, J. C., & Johnson, J. (2010). *Writing arguments: A rhetoric with readings*. United States: Pearson, p. 61.

In classical style, the major sections are the parts which reflect the writer's own position and the one presenting a summary and a critique of the alternative views. The disclosure of the thesis in the introduction allows the audience to see the whole picture in a concise way. The classical structure is especially a useful tool in persuading a neutral or undecided audience. One significant characteristic of classical argument is that the writer is willing to summarize counter opinions to his or her own in a fair way and respond to them in an open manner. This requires the writer to refrain from making "loaded, biased, or straw man summaries that oversimplify or distort opposing arguments..." (Ramage et al., 2010, p. 128).

2.6.1.2. The Toulmin Model

In the 1950s, Toulmin (1958) took a counter position against the prevalent argument models which were grounded on formal logic by developing and defending an audience-based courtroom model. Ramage et al. (2010) clarify the difference between formal logic and Toulmin's courtroom model by stating that in Toulmin's model:

All assertions and assumptions are contestable by "opposing counsel" and that all final "verdicts" about the persuasiveness of the opposing arguments will be rendered by a neutral third party, a judge, or jury. As writers, keeping in mind the "opposing counsel" forces us to anticipate counterarguments and to question our assumptions. Keeping in mind the judge and jury reminds us to answer opposing arguments fully, without rancor, and to present positive reasons for supporting our case as well as negative reasons for disbelieving the opposing case. Above all else, Toulmin's model reminds us not to construct an argument that appeals only to those who already agree with us. In short, it helps arguers tailor arguments to their audiences (p. 76).

Toulmin (1958)'s terms are combined with Aristotle's concept of the *enthymeme* for the analysis of arguments. In his model, the basic elements involved are claim, warrant, grounds (evidence, reasons, support), backing, modal qualifiers, and rebuttals.

2.6.1.2.1. Claim

Every argument has a certain purpose which is to propose a claim. The claim is the intended aim of the argument to prove or establish an idea (Barnet & Bedau, 2011). A claim, i.e., a conclusion, is the main constituent of an argument that is controversial in its nature; therefore, it needs further support and evidence before it is accepted by the readers.

2.6.1.2.2. Warrant

Ramage et al. (2010) inform that Toulmin (1958)'s term warrant derives from the concept of warranty or guarantee. In this case, the warrant is defined as the value, belief, or principle which the audience must have so that the soundness of the argument could be warranted. For example, when one says, "That is an unwarranted conclusion", this actually implies that the person has jumped from the available information to a conclusion without any warrant that justifies that move. Consequently, it can be inferred that the warrant, when it is accepted by the audience, actually guarantees that the argument is sound. As stated by Barnet and Bedau (2011), a warrant is quite obviously and literally stated in some cases. Yet, in some other situations, especially when the issue is controversial, one needs to utilize different strategies such as proposing a parallel argument whose structure and form is parallel to the argument supported. In this way, the message given to the audience is that if one is willing to agree with the truth of the simpler argument, then the more complex argument must also be accepted since they both share the same structure.

2.6.1.2.3. Grounds and Backing

Claims and warrants are not enough for good arguments since they are usually one-sentence statements offering only a frame for an argument rather than serving as a developed argument. In order to develop and make the arguments persuasive, Toulmin (1958) asserts that grounds and backing are essential. Grounds are referred to as the supporting evidence that convince the audience to agree with your reason and the claim is based on the grounds. Facts, data, statistics, causal links, testimony, examples, and anecdotes are some examples

of grounds. Ramage et al. (2010) use an analogy to clarify the importance of grounds saying that they give body and weight to arguments and they are “the blood and muscle that flesh out the skeletal frame of your enthymeme” (p. 77). Basically, grounds are the evidence that support the reason. However, Barnet and Bedau (2011) warn that it is not possible or logical to support every claim by every kind of ground. Similarly, not every ground is a good support for every type of claim.

Backing is especially essential when the audience has questions or doubts about the warrant. In this case, the writer must support the warrant. Backing is, in its simplest terms, the argument supporting the warrant. The aim of backing is to convince the audience into accepting the warrant. Barnet and Bedau (2011) observe regarding this issue that one could be urged to justify why the reasons offered are good ones and why someone must believe in them instead of being skeptical of them. It is because there is still a possibility that adversarial readers question the reasons and grounds or the warrant and backing of an argument despite the soundness of the arguments. Toulmin (1958)’s system encourages the writer to envision situations in which how some resistant audience would attempt to refute the argument. In doing so, the writer could approach the argument from the skeptics’ perspective and be prepared for the rebuttals.

2.6.1.2.4. Modal Qualifiers

The term qualifier is used to “limit the force of a claim and indicate the degree of its probable truth” (Ramage et al., 2010, p. 79). Knowing that no argument is actually completely conclusive and real-world arguments do not necessarily prove a claim, qualifiers are utilized to soften the degree of certainty using hedging or tentative language such as very likely, probably, or maybe to demonstrate the strength of the claim which one wants to deduce from the grounds and warrant. Barnet and Bedau (2011) offer a more detailed list of qualifiers by also mentioning few, rarely, many, often, sometimes, perhaps, usually, more or less, regularly, and occasionally. Consequently, when it is possible to observe exceptions to the warrant or the grounds are not very powerful, the claim needs to be qualified to prevent generalizations considering the apparent counterexamples. As much as the role of the assertion in an argument, showing the scope of the assertions is also crucial since their scopes vary.

2.6.1.2.5. Rebuttals

Very few arguments are formed in a way that is beyond dispute, in which the grounds, warrants, backing, and qualifiers are very well connected that leaves no chance for doubt. Most of the time, arguments have numerous counterarguments, one of which may sometimes be the most persuasive. It is not very probable to understand the strength of claims very well until they remain vulnerable to certain criticism, counterattack, or rebuttal (Barnet & Bedau, 2011). The awareness of and alertness to such weaknesses could help one strengthen the proposed arguments. In their book, Barnet and Bedau suggest the following questions to ask in evaluating an argument using the Toulmin method (2011):

- What claim does the argument make?
- What grounds are offered for the claim?
- What warrants the inferences from the grounds to the claim?
- What backing supports the claim?
- With what modalities are the claim and grounds asserted?
- To what rebuttals are the claim, grounds, and backing vulnerable? (p. 345)

2.6.1.3. Rogerian Scheme

This approach to argumentation was named after the psychologist Carl Rogers, who initially utilized this strategy to reconcile differences. Rogerian argument is an effective and conciliatory strategy to address resistant audiences. In classical arguments, the focus is on assertion and refutation and the writer endeavors to attack the opponent's views and defend his or her own position. In contrast, Rogerian argument emphasizes "self-examination, clarification, and accommodation rather than refutation" (Ramage et al., 2010, p. 139).

In Rogerian argument, emphatic listening, which is related to looking at an issue from another person's perspective in an understanding and appreciating manner, is underscored. Carl Rogers trained individuals not to reveal their judgement of the other person's ideas before actively listening to that person, comprehending that person's reasoning, acknowledging his or her values and respecting the humanity of that person. Rogers held the view that the traditional methods of argumentation were threatening. On the contrary, Rogerian argument underlines the psychological aspects of an argument as well as logical dimensions. Consequently, the ultimate goal is not to win an argument but reduce threat and build bridges. The writer achieves this objective by demonstrating the resistant audience that they share a variety of common values instead of trying to convince the audience to support his or her views. As a result, the writer can establish a common ground and a synthesis of the opposing views is created. A win-win situation is aimed to be established in which there

are no losing sides. To distinguish Toulmin and Rogerian styles, Table 4 presents a summary of the main differences between them.

Table 4

A Summary and Comparison of Toulmin vs. Rogerian Style

Toulmin	Rogerian
• adversarial tone • although concessions may be made, arguments mostly based on refutation • opponent is “wrong” and will be overcome by evidence	• nonconfrontational, collegial, friendly tone • respects other’s views and allows for more than one truth • seeks to achieve common ground, not to convince 100 %

Retrieved from <https://www.slideshare.net/DrDunley/toulmin-and-rogerian-arguments>

Furthermore, in Table 5, a summary of the distinctive characteristics of Classical, Toulmin, and Rogerian Argument is provided to clarify their approaches to argumentation.

Table 5

A Comparison of Classical, Toulmin, and Rogerian Argument

	Classical Argument	Toulmin Argument	Rogerian Argument
Method	argues an issue using evidence and refutation	argues an issue emphasizing the strength of your evidence	argues an issue emphasizing similarity with your opponent’s beliefs
Opponent	open-minded	close-minded	close-minded
Structure	1) Introduction 2) Background 3) Confirmation 4) Refutation, concession 5) Summation	1) Claim 2) Evidence 3) Warrant 4) Refutation, 5) Concession	1) Background 2) Common ground 3) Context, conditions 4) Concession

Adapted from <http://www.clas.ufl.edu/users/cmartin/UWPENC1102/argumentation.htm>

2.7. Concept of Feedback

In Ur (1996)’s definition, feedback is the information that the learner gets concerning his or her performance in the learning task, usually attempting to improve the future performance. Sherman (1994) defines feedback as a “response or reaction from another person to something people do, that can be used to help people assess and improve on their performance in the future” (p. 57). Lewis (2002) characterizes feedback as a way of communication between the teacher and the learner, which helps form a positive rapport between the two parties as well as enabling the teacher to monitor students’ progress in their writing. Similarly, Todd et al. (2001) elaborate on this issue and admit the role of feedback

as a means of communication between the learner and the teacher that is achieved through suggestions, evaluations, information or support.

2.8. Written Corrective Feedback

Feedback could be given as written or oral to students' compositions. A variety of feedback types such as individual conferences, oral teacher feedback, e-feedback, peer feedback, taped feedback, and reformulation could be utilized to ease the burden of the teachers in the feedback process. One concern that is frequently shared by teachers is that they have too many students and it takes too much time and effort to give feedback to each individual student. At this point, teachers could be suggested to utilize different types of feedback that can make the process easier such as oral feedback, peer, or group feedback depending on the tasks and their objectives.

Among all the feedback types, written feedback is the most prevalent one and it has a key role in L2 writing classes (Hyland, 2003). Written feedback can guide students about their mistakes by providing comprehensive explanations and many students also consider that teacher feedback is vital for becoming more effective writers. Oral feedback is also beneficial for students due to allowing them to receive immediate response from the teacher and asking their questions on the spot. Understandably, the issue of written corrective feedback (WCF) has been a controversial issue and attracted a lot of attention in second language writing research. There have been various views on the effectiveness of WCF regarding the feedback types as well as how it can be effectively applied to help EFL learners improve the accuracy in their written production. In the following section, the vigorous debate between Truscott and Ferris in terms of giving feedback is briefly elucidated.

2.8.1. Truscott vs. Ferris

Truscott's article entitled "The case against grammar correction in L2 writing classes" laid the foundations of a debate over whether and how to give feedback to L2 learners on their grammatical errors in their written works, which has received great attention among researchers and classroom practitioners (Ferris, 1999; Truscott, 1996, 1999). Truscott (1996) claimed that there is no room for grammar correction in writing classes and it ought to be abandoned. He concluded that there is no conclusive research evidence to validate that error correction assists learners in improving the accuracy in their texts and explained that this

finding should not be surprising due to several reasons. Initially, error correction overlooks SLA insights in terms of the gradual and complex process of the acquisition of language forms and structures of L2. Furthermore, he refers to a set of practical problems resulting from both teachers' and students' skills and eagerness to offer and receive error correction. He further claims that error correction is actually detrimental since it causes less time and energy to be given to more productive components of a writing course; therefore, writing teachers ought to adopt a 'correction-free approach' in class. Consequently, such claims have led to a big amount of intense debate (Ellis, 1998; Ferris, 1999; Ferris & Hedgcock, 2005; Truscott, 1999).

Ferris (1999) took a counter position against Truscott's views and claimed that the claims proposed by him were "premature and overly strong" by referring to the growing research evidence showing that error correction can actually help some learners when it is selective, clear, and prioritized (p. 2). Ferris acknowledged that Truscott's points were related to the nature of SLA and the practical problems in giving corrective feedback, yet she also put forward that the evidence that he mentioned to support his view was not always true. She further stated that there were cogent reasons for teachers to keep offering feedback by also acknowledging the necessity to contemplate over ways for the improvement of the practical issues stressed by Truscott at the same time.

Despite his previously made call for abandoning error correction, Truscott (1999) responds to Ferris by admitting that many questions were open and it would be early to assert that error correction could be beneficial on no account. Yet, he regarded grammar correction as a bad practice until it is shown to be a beneficial practice in certain cases by further research. Acknowledging the future research direction pointed by Ferris (1999), he proposed that the focus must be on which methods, techniques, or approaches to error correction can facilitate students' improvement and whether learners achieve more improvement in certain types of errors compared to the others.

Ferris also (1999) offered a distinction for errors: treatable and untreatable errors. Treatable errors are the ones that happen in a rule-governed way and students can simply be referred to a set of rules or a grammar book and rectify the errors on their own. Errors related to subject-verb agreement, use of articles, verb tense and form, plural and possessive noun endings, and sentence fragments can be referred to as some instances of treatable errors. On the other hand, untreatable errors are idiosyncratic and students are required to make use of acquired knowledge of the language so as to resolve the error. Untreatable errors involve

errors related to word choice, unidiomatic sentence structure, missing or unnecessary words, etc.

2.8.2. Forms of Feedback

Hyland and Hyland (2006a) offer two categories of written feedback: direct and indirect feedback. Whether one accepts the usefulness of WCF in general terms or not, the form of WCF is regarded vital to the successful fulfilment of the target outcome. According to Ellis, the enormity of the error is a key factor in deciding to use direct or indirect feedback on the side of the teacher (2008).

2.8.2.1. Direct Feedback

Direct or explicit feedback is when a mistake is identified by the teacher and the correct form is also provided (Ellis, 2008). Direct feedback may be provided in various forms such as crossing out an unnecessary word or phrase, inserting a word or a morpheme that is necessary in the structure, writing the correct word near the wrong one in the margin or just above it (Ferris, 2006). Bitchener, Young, and Cameron (2005) hold a positive view about giving direct feedback and state that students can more easily understand what teachers intend on their comments. In a similar vein, Vyatkina (2011) mentions that direct feedback can enable students to learn novel information from the correction provided by the teacher since there is usually additional information about language. Chandler (2003)'s findings also reveal positive results. The students in the study stated that WCF is more immediate and effective to help overcome the problems in their writings.

2.8.2.2. Indirect Feedback

In giving indirect feedback, despite indicating the presence of a mistake, the teacher does not provide the correction and it is the student's responsibility to diagnose and correct it (Bitchener et al., 2005). One primary objective of giving indirect feedback is to foster learner autonomy and help students analyze and beware of their own mistakes. Teachers can indicate the presence of a mistake by underlining, circling, or coding (Hyland & Hyland, 2006a). In this way, students are encouraged to contemplate over and solve the problem highlighted by the teacher. For some researchers, indirect feedback is a more useful and appropriate means of giving feedback for students' writing development in the long run compared to direct

feedback (Ferris, 2002; Frantzen, 1995). Lalande (1982) mentions that indirect feedback contributes to guiding learning, assisting learners to solve problems on their own, and noticing the language which may eventually foster language acquisition (Schmidt, 1990). Similarly, Miceli (2006) comments on the usefulness of indirect feedback and concludes that it can encourage learners to reflect upon their written production and achieve further improvements.

According to Srichanyachon, “L2 students prefer errors marked with teachers’ codes because it is easy for them to edit and improve their papers” (2012, p. 9). Coded feedback is increasingly becoming favorable both for the teachers and the students (Ferris & Roberts, 2001; Leki, 1991). When a code is used, it embodies a specific type of error. Teachers underline the part of the sentence where the error is found and uses the code to indicate the presence of the error such as SP (spelling error), and SVA (subject-verb agreement). The rule of thumb is that students must be familiar with the codes used by the teacher so that a common understanding exists between them and students are not shocked when they see the teacher’s comments.

Indirect feedback is beneficial when integrated with self-revision, yet learners who have lower proficiency may find it hard to detect and resolve errors easily and effectively. In Cohen and Cavalcanti (1990)’s study, it was found that weaker students desired to receive feedback that clarified whether they were in the right track when the expectations of the task were considered. It can be argued that direct feedback is more effective in certain contexts especially if the focus is to revise syntax and vocabulary (Miceli, 2006). Ferris (2002) also concludes that the use of giving direct feedback is more appropriate for beginner learners and untreatable errors.

2.8.2.3. Focused Feedback vs. Unfocused Feedback

Focused (selective) feedback involves giving feedback on merely a single or several preselected types of errors while unfocused (comprehensive) feedback entails providing feedback on most or even all errors that are found in a writing (Ellis, 2008). Several studies revealed that focused WCF contributes to writing accuracy (Bitchener & Knoch, 2010; Sheen, 2007). Similar results were obtained in Ellis (2008)’s study in which students receiving focused WCF outperformed those who were not given any feedback, with more improvement in the accurate use of articles compared to an unfocused condition. Some SLA researchers hold the view that leaving errors untreated may lead them to be fossilized

(Scarcella, 1996). In response to this, Ferris and Hedgcock (2005) offer a blend of the two methods. Teachers can selectively mark the errors on the early drafts and the errors on the final draft could be marked comprehensively.

2.8.2.4. Written Corrective Feedback on Local Issues vs. Global Issues

WCF on local issues concentrates on such issues as spelling, punctuation, and syntax whereas WCF on global concerns refers to focusing on ideas, content, organization, and logic (Montgomery & Baker, 2007). There have been various views as to the preferences of the learners in the literature. In Cohen and Cavalcanti (1987)'s study, students formulated that teachers should focus their attention on giving feedback on local issues despite disapproving of WCF on local matters on their early drafts since this would prevent them from concentrating on more global issues in their writings. Regarding the provision of WCF on local and global concerns, Zamel (1985) suggested that global issues should be addressed on the initial drafts and local features should be dealt with on the later drafts. Ashwell (2000) conducted a study and it was revealed that focusing on both local and global aspects during the writing process was beneficial so long as more emphasis was put on global issues initially. In another study conducted by Min (2005), it was found that students tended to focus more on global matters than local ones while giving feedback to their peers.

2.8.2.5. Teacher Feedback to Written Products of Students

With the paradigm shift from product- to process-oriented, writing teachers' perceptions about how to give feedback have also altered. Previously, teachers assumed that giving feedback to the student writing once would be enough since the focus was on the product. Yet, the increasing value given to the process approaches brought a new perspective and giving feedback to the student writing several times with certain intervals became the common application. In time, teacher feedback became a complementary and indispensable component of writing classes due to such reasons as teachers starting to feel that providing feedback to written texts was a professional responsibility (Ferris, 1995; Sommers, 1982) and students' appreciation of teacher comments about their drafts which helped them improve their work (Conrad & Goldstein, 1999; Elwood & Bode, 2014).

According to Richards and Lockhart (1996), feedback may serve to strengthen motivation and build a positive classroom environment in addition to informing learners about their

progress. Brookhart (2017) mentions that feedback involves two factors: cognitive and motivational factors. The former is about informing learners of their current abilities and what to do for future improvement. Once cognitive needs are satisfied, most students start to feel that they have control over their own learning, which is related to motivational factors.

Feedback has a paramount importance in process writing due to enabling students to make betterments to produce a better version of their compositions. In its broad terms, feedback can be described as the questions, suggestions, or comments provided by either the teacher or peers to improve the quality of a text produced by the learner. Yet, feedback process is usually a complex one especially on the side of the students. Coffin, Curry, Goodman, Hewings, Lillis, and Swans (2003) describe the common characteristics of feedback as in the following:

- The objectives of feedback are often mixed and unstated.
- A mismatch exists between teachers' and students' understanding about what is required in writing.
- Teachers' comments can be found as unclear, vague, and confusing by the students.
- Different teachers may comment differently on the same piece of writing.
- Teachers' personal interests, values, and backgrounds have an impact on deciding the kind of feedback and how it is provided.
- Feedback is not always consistent with academic guidelines.
- Feedback is not always beneficial as expected by teachers or students.
- Providing and receiving feedback is both emotional and rational activity (p. 103).

Though oral and peer feedback are useful and favorable in L2 writing classes, teacher written feedback continues to enjoy its popularity as the most prevalent feedback type. Results of surveys about students' feedback preferences mostly indicate that L2 learners tend to favor teacher written feedback over oral and peer feedback (Saito, 1994; Zhang, 1995). Among the most commonly utilized means of written feedback are teacher written comments, checklists, rubrics, and scales.

In process writing, teachers share their comments about the first drafts of the student texts regarding the components of writing such as grammar, lexis, content, and organization. Students usually appreciate such feedback since it helps them notice their strengths and weaknesses and take actions accordingly while producing their second drafts. Especially students from cultures in which the teacher is regarded as the mere source of authority can favor teacher feedback more compared to other methods since they confide in the teaching skills and knowledge of the teacher in L2 (Srichanyachon, 2012).

Despite all the effort and time spent by writing teachers, the results of the studies conducted on the effectiveness of teacher feedback were "mixed and inconclusive" (Lee, 2011, p. 378). Hillocks (1986) also asserted that teacher feedback did not significantly influence the

development of students' writing skills. Furthermore, Ferris (2008) reports that the drafts with the feedback received from the teacher may cause nervousness for some learners, or some may find it hard to read the handwriting of the teacher or comprehending what the symbols used mean. Sommers (1982) further elaborates on the issue by pointing out that a great deal of teacher written feedback is inconsistent, vague and is misunderstood by students. Similarly, Zamel (1985) comments on the issue as follows:

ESL writing teachers misread student texts, are inconsistent in their reactions, make arbitrary corrections, write contradictory comments, provide vague prescriptions, impose abstract rules and standards, respond to texts as fixed and final products, and rarely make content-specific comments or offer specific strategies for revising the texts. The teachers overwhelmingly view themselves as language teachers rather than writing teachers (p. 86).

It can obviously be inferred from the quote above that writing teachers are criticized for their tendency to focus more on linguistic aspects with less emphasis on providing content-related comments and it is suggested that they also need to include comments specific to the content of the student writings. Additionally, they should be consistent and clear in their comments so that teacher written feedback can be of utmost benefit to students. Yet, Hyland and Hyland (2006a)'s interpretation of such negative conclusions is that in those years, feedback research was just beginning to develop. Similarly, Ferris and Hedgcock (2005) also observe that such negative results were obtained from the studies conducted in contexts where product-oriented approach was generally dominant.

Starting from 1990s, more positive results were obtained from the studies conducted (Ferris & Hedgcock, 2005). It was revealed that writing teachers started to focus on more aspects of writing in addition to surface features (Ferris, 2003). For instance, Ferris (1997) investigated the marginal and end comments a teacher gave to the writings of 47 advanced ESL students and the result obtained from this study was that "a significant proportion of the comments appeared to lead to substantive student revision" (p. 315). Additionally, some late studies took the context and the individual differences of the learners into consideration. Hyland (1998)'s study revealed that teachers' own beliefs about writing and teacher feedback had a role in their willingness to write and how they benefitted from feedback. Conrad and Goldstein (1999)'s study also stressed the importance of individual differences and they noted that "factors such as content knowledge, strongly-held beliefs, the course context, and the pressure of other commitments provide explanations for students' revision decisions and account for unexpected success or lack of success in their revising" (p. 147).

Written teacher feedback may appear on the students' drafts or on a separate paper. When they are written on the students' drafts, teacher comments could be either in the margins or

at the end of the text. Those written in the margins are referred to as marginal comments and are usually provided to highlight specific mistakes and function as immediate feedback. Comments written at the end of the text are called end comments and mostly serve the purpose of providing suggestions and evaluation related to the overall task as opposed to marginal comments. One issue about marginal comments is that since the space on the paper is usually limited, they may be confusing and difficult to follow for students. On the contrary, end comments tend to be clearer and more reader-friendly for students. Since both types of comments have their own advantages, teachers are suggested to combine the two ways for providing more effective feedback (Hyland, 2003).

Ferris (1997) conducted a study to investigate whether certain commentary types were more beneficial compared to the others in helping L2 learners revise their work more effectively. The results indicated that the most effective revisions made by the students were thanks to marginal comments, requests for clarification, and comments on grammatical aspects. Language learners are generally eager to receive feedback on their errors since they place importance to accurate use of language in their written production and lack of such feedback may lead to frustration (Ferris & Roberts, 2001; Leki, 1991). However, despite the abundance of studies that indicate students' wish to receive feedback on grammatical aspects, some studies reveal that students desire the teacher to comment on the content and ideas in their text, as well. Sträub (1997)'s study showed that students wanted to receive feedback on global issues such as content, organization, and purpose as well as local issues including sentence structure, grammar, and word choice. Students also commented that they would like the teacher to give comments with advice, explanations as well as posing open questions.

2.9. Critical Thinking in Writing

Despite a lack of consensus over the definition of critical thinking due to the varying understandings of the concept across different disciplines, some similarities stand out in the proposed definitions. John Dewey (1910), one of the first philosophers to theorize about reflective thinking, defined critical thinking (CT) as “an active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it ends” (as cited in Nejmaoui, 2018, p. 99). Bloom et al. (1956) offered a new perspective for CT with the establishment of the famous taxonomy in which six categories of learning objectives are offered (i.e., knowledge,

comprehension, application, analysis, synthesis, and evaluation). According to this taxonomy, the top three categories are the representatives of CT while the other three at the bottom are the more basic skills. A similar definition to Dewey (1910)'s was later proposed by Ennis, who explains CT as "reasonable reflective thinking focused on deciding what to believe or do" (1996, p. 166).

Analytical thinking is a noteworthy trait of the learners in the 21st century, which moves the focus from learning to doing. Managing intelligence and enhancing a person's ability to utilize critical thinking skills in real life conditions as a basis for human development is a substantial part of the learning process. With the easy access to and availability of information in this age, teaching students how to approach and have a critical approach about the information they encounter and receive has gained a great deal of importance (Nejmaoui, 2018) since they are surrounded by an abundance of information. Andrews (2010) proposes that fostering critical thinking is one of the expected outcomes of tertiary education. Considering the importance of critical thinking in education, Siegel (1985) maintains that students studying a foreign language should not be excluded from this objective since language learning is more than just repeating and practicing language structures by also entailing being critical while reading, writing, and speaking in L2. Welcoming this change in education, the integration of critical thinking was adopted in the field of ELT.

Reasoning, also called as syllogism, is referred to as the sum of basic thinking, critical thinking, and creative thinking. It is a common activity used by people to support conclusions and is essential to assess the validity of a notion. Analytical reasoning is the ability to be able to comprehend qualitative or quantitative information in a variety of contexts and recognizing its pattern (Amornchai et al., 2015). This ability requires the individual to apply information beyond her/his mentality and what is taught in class. Those who prove unsuccessful at applying analytical reasoning usually fail to utilize additional data to construct their own thinking structure. Critical reasoning is a must for thinking and intelligence process, which is essential for graduate students who are regarded as the people responsible for the development of countries; therefore, education system should be enhanced to guarantee the efficient learning of this skill (Amornchai et al., 2015). Unclear reasoning may result in imprecise perspective, which disturbs the connection of ideas and contents, making thinking concepts vague or even wrong (Amornchai et al., 2015). Similarly, according to Krulik and Rudnick (1993) reasoning is among the most vital elements of thinking comprising of numerous complex procedures.

Alagözlü (2007) points to the importance of possessing critical thinking skills required for academic success and for life as a result of the recent trends in the field of education. It has become an essential skill for the learners to inquire the validity of the ideas presented in the texts and have a judgmental approach towards the other people's ideas. They are expected to filter the proposed claims through their reasoning rather than readily accepting them to be true by searching for logical flaws. Several scholars remark that, in addition to being related to limited English language knowledge, the difficulty experienced by Turkish students in terms of critical thinking skills could also be attributed to the fact that it is not a skill emphasized overtly in Turkish educational system (Çokluk-Bökeoğlu, 2004; Dahmeroglu & Vancı-Osam, 2005).

Chance explains that critical thinking involves the skills to “analyze facts, generate and organize ideas, defend opinions, make comparisons, draw inferences, evaluate arguments and solve problems” (1986, p. 6). Beyer explains critical thinking as “... making reasoned judgements” (1995, p. 8). Critical thinking encompasses the ability to identify, evaluate, construct sound arguments, and infer a conclusion based on one or multiple premises, which necessities the examination of logical connections among statements or data. Beyer (1985) observes that ambiguity and doubt act as a necessary critical thinking function encouraging the writer to investigate until the correct conclusion is discovered. Knott (2005) summarizes the aspects that must be recognized by the students in the framework of critical thinking as:

- 1- the principal claims or objective of the text (its thesis)
- 2- judgements about the context
- 3- kinds of reasoning employed in the text
- 4- the evidence the text utilizes such as the supporting facts, examples, which are essential for an argument
- 5- the strengths and the weaknesses of the arguments offered

Kurland (2000) concludes that a good writer must be able to produce some content, propose assumptions, evidence, and arguments to defend and draw conclusions based on them. In the text produced, an actively thinking mind should be observable. There is also a close connection between the logical fallacies in students' writings and the ability to think critically and evaluate the quality of arguments. According to Davis and Davis (2000), critical thinking involves the ability to recognize logical fallacies. Logical fallacies found in students' arguments usually result from problems in critical thinking. Stapleton proposes several criteria in evaluating argumentative writings in terms of critical thinking elements (2001):

Arguments: An argument can simply be defined as a claim supported by reason(s). A claim involves a statement which can be argued in terms of its truth, and is proposed as a response to a problem or a controversial issue. In order to classify a claim as an argument, it must be accompanied by a supported reason and should not stand alone. Otherwise, it becomes an opinion.

Reasons: The purpose of the reasons is to support claims and clarify why the claim deserves to be believed. There must be a direct reasonable link between the claim and the reasons so that they could be bound together and called as an argument. Reasons are expected to be novel, not a mere repetition of the ones in the writing prompt. In the absence of elaboration, they do not reflect elements of critical thinking.

Evidence: Evidence embodies statements or assertions whose role is to reinforce the argument. Evidence may come in certain forms including personal experience, research studies, statistics, citing authorities, comparisons and analogies, pointing out consequences, facts, logical explanations, and precisely defining words. Ramage et al. (2010) summarize the qualities of good evidence as showing integrity for timelines (not too old), representativeness (not extreme examples), sufficiency (not based on limited data), objectivity (not biased), and trustworthiness (sources are reputable).

Conclusion: A conclusion is a statement or statements in which the writer aims to make the reader believe. This belief is expressed through an argument, evidence, or other statements that the writer utilizes to indicate the certain belief. Conclusions usually occur in the form of agreeing, disagreeing, or taking a middle ground depending on the writing prompt. Conclusions could be explicit, or self-announcing through the use of certain clear phrases such as I agree, I disagree, or I am undecided. Conclusions could also be implicit, in which the belief of the writer is not stated and is left for the reader to infer.

Recognition of Opposition and Refutation: Opposing viewpoints involve counter statements or alternative views to those stated in a claim. Similar to arguments, these alternative viewpoints are not expected to be original and can simply be lifted from the prompt. Refutations are the statements that allow the writer to respond to the opposing viewpoints with the purpose of indicating its inadequateness in a certain way. The weaknesses in the arguments could be related to logical flaws, poor support, erroneous assumptions, or wrong values as proposed by Ramage et al. (2010). Refutations and the opposing views are required to be logically connected and they might offer rival causes or solutions. Furthermore, the writer's own conclusion must be maintained while refuting opposing or alternative views.

Fallacies: Fallacies are defined as errors in reasoning. A fallacy occurs when the claim is not supported by the reason in a certain way.

A study was conducted to investigate critical thinking and voice in the argumentative essays of 76 EFL students by Alagözlü (2007). In this study, one major outcome was that too many unsupported claims existed in the students' essays, which implied that the students failed to offer arguments supported by reasons and evidence borrowed from the sources they read. She further mentioned that the students mostly tended to write or copy what they read instead of evaluating the given information in a critical manner, which caused them to have insufficient amount of evidence and reasons to substantiate their arguments. Seemingly, the students were unable to recognize and refute the opposing arguments in the given texts and their claims were not sufficiently supported logically to lead to relevant conclusions.

2.9.1. Approaches to the Teaching of Critical Thinking

There are basically four approaches about how to teach CT: general approach, infusion approach, immersion approach, and mixed approach. General approach is when CT skills are taught in isolation without being integrated with a subject matter or referring to a specific context (Ennis, 1989). The instruction can be given by means of informal logic through abstract variables (e.g., If X, then Y. X is true, therefore Y). Additionally, the teacher can teach CT skills by utilizing various real-world situations (Dumitru, 2013). Infusion approach refers to merging the teaching of CT skills with a subject matter. Namely, students' CT skills are fostered in their own disciplines. Supporters of this approach stress the importance of subject-specificity and hold the view that each discipline has its own logic requiring peculiar CT skills (Swartz, 1987). Immersion approach suggests that CT skills are implicitly integrated in a subject matter. Rather than explicitly training students to develop more critical perspectives, the teacher challenges students intellectually while teaching a specific subject matter. Mixed approach refers to mixing general approach with either infusion or immersion approach. When mixed approach is followed, one part of the instruction targets general CT skills and the other part is devoted to the handling of a subject matter with CT skills either in an explicit or implicit way.

2.9.2. Individual Voice and Identity

ESL/EFL writing emphasizes the issue of voice and identity since “it encompasses negotiation, adaptation, appropriation, and resistance that are likely to occur in the course of conceptualization, drafting, and writing” (Ha, 2009, p. 136). It exhibits the writer identity dimensions, i.e., authorial self, autobiographical self, discoursal self, and the relational dimension as discussed by Ivanić (2005). Kubota (2003) asserts that expression of voice could be a serious challenge for L2 writers. The concept of voice is debatable due to lack of a commonly accepted definition and being defined by the societal context (Ramanathan & Kaplan, 1996), yet it is still a useful term in understanding ESL/EFL writing (Ha, 2009). Individual voice or self-voice is the authorial identity (Ivanić, 1998) or the authorial presence (Hyland, 2001) in writing. In Elbow (1981)’s words, it is what “captures the sounds of the individual on the page” (p. 287). An utterance is produced by a voice which reflects a person’s “perspective, conceptual horizon, intention, and world view” (Wertsch, 1991, pp. 51-52). Alagözlü (2007) recognizes that it is rather challenging to identify the authorial voice in written work since it entails “voice appropriation which is not a straightforward citation of other people’s ideas, but a rather complex set of linguistic strategies” (p. 121). According to Scollon et al., the use of the first person and second person pronouns “I” and “you”, vocative “hey guy”, and a more explicit voice marker “in my opinion” may reveal the authorial voice in the statements (1998, p. 232).

2.10. Logical Fallacies

In a broad sense, a fallacy is simply defined as an error in reasoning. Logical fallacies commonly occur when the premises of an argument are insufficient to support the related conclusion. Fallacies could be formal or informal. According to Cambridge Dictionary (2021), a fallacy is “a false belief”. Similarly, in Oxford Learner’s Dictionaries (2021), a fallacy is defined as “a false way of thinking about something”. In Sinnott and Fogelin’s definition, a logical fallacy is referred to as a defective conclusion (2010). According to Walton (1991), a fallacy is “a calculated tactic of deceptive argumentation used by one participant in a dialogue to trip up another participant” (p. 337). In Sanborn (1995)’s definition, a fallacy occurs when reasoning fails “to meet the test of truth or necessary relationship” or in case of a deception or an error in subject matter (p. 181). Hansen (2002)’s study reveals that despite knowing what a fallacy is, defining the concept clearly is a more

complicated issue. To elaborate on this, Walton (1995, pp. 237-238) proposes six qualities of logical 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.
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.
6. A serious violation, as opposed to an incidental blunder, error, or weakness of execution.

Logical fallacies are illegitimate arguments or irrelevant points which decrease the credibility and the strength of a claim. They are false yet popular beliefs and are deceptively bad arguments in nature. For some scholars, high-quality argumentations and fallacy-free thinking are included among the major concerns in written discourse (McCart, 2008; Tindale, 2007). That argument papers are naturally mostly based on logic and reasoning makes it necessary identify and understand errors in reasoning committed by writers. However, despite having a significant role in qualifying an argument as either a sound or unsound one, there has been a scarcity of research in the context of EFL, which could be due to the fact that needs regarding other aspects of writing such as language use and organization require more urgent attention. The ability to identify and avoid fallacies is supplementary for good reasoning (Hansen, 2020). Learners need to have the knowledge of fallacies since this knowledge may allow them to refuse unsound reasons and comprehend what makes them unrealistic. In other words, the learner can contemplate over the proper reasons and judge their quality (Amornchai et al., 2015).

Gula (2002) asserts that a fallacy is an error in reasoning rather than in fact or belief and concludes that it involves thought process. One type of a thought process is an argument. An argument can be defined as a series of statements. Some of the statements are premises (i.e., the evidence), assertions, reasons, or claims and conclusions are derived based on these premises. It is claimed by the argument that since the premises are true, the conclusion is true. When the conclusion in an argument logically follows from the premises, then the argument is referred to as valid. Yet, when the conclusion does not logically follow from the premises, the argument is an invalid one. In evaluating an argument, it is crucial that one examines both the premises and the conclusions. The premises must be accurate and thorough and the conclusion should be clearly derived from the evidence. If these conditions are not met, then the argument is classified as a fallacious one. Johnson (1998) states that “we reason so frequently and so naturally that we are often not aware of the logical principles

underlying our reasoning” (p. 2). According to Cottrell (2005) logical fallacies could intentionally occur as well as being unintentional. There may be various reasons why an argument is flawed including the writer’s inability to notice the flaws in the arguments, deliberately aiming at misleading the audience by distorting the reasoning, or manipulating the language to evoke some intended thoughts and emotions in the reader. Learners need awareness and understanding of logical fallacies to avoid proposing fallacious arguments and recognize the flaws in others’ arguments, as well.

Johnson and Blair (2006) point to the significant connection between logical argumentation and logical fallacies. They elaborate on the issue asserting that having the knowledge of informal fallacies can enable students to analyze and evaluate their claims. It is further stated that a good argument can be made by following the standards of relevance, sufficiency, and acceptability (RSA triangle); as a result, a fallacy is defined as “a pattern of argumentation that violates one of the criteria a good argument must satisfy and that occurs with some marked degree of frequency” (Johnson & Blair, 2006, p. 54). Fallacies, therefore, distort the rules for critical discussions and adversely impact the effort to attain a logical outcome of a controversial matter (van Eemeren & Grootendorst, 1992). Fogelin and Duggan (1987) further state that fallacies are more than mere invalid argumentation. A fallacy is a broad term that could be used to criticize any attempt for the fixation of beliefs, which has a great potential to evoke false or unfounded beliefs.

2.10.1. Classification of Logical Fallacies

Stapleton (2001) states that logical fallacies occur when the claim is not supported by the reason, which can happen in a number of ways. Regarding the classification of such ways, Sinnott and Fogelin (2010) assert that it is not possible and practical to try to make a list of fallacies since their number is high and there are various types of logical fallacies leading to a scope problem (Aikin, 2016). The classification of logical fallacies could be traced back to Aristotle (384-322 B.C.E.) in Greece and Xünzi (around 310-220). Therefore, it is suggested that the most common and tempting types of fallacies could be addressed (Sinnott & Fogelin, 2010) rather than trying to formulate a single way of classification. Khoiri and Widiati (2017) similarly state that any researcher interested in identifying and classifying fallacies is faced with the challenges of limitless number of fallacies, different versions of taxonomy, and overlapping classifications of fallacies in a single claim. Therefore, having a general understanding of how fallacies work could help one to notice and take an appropriate

position in their presence. Toulmin, Rieke, and Janik refer to the ability of noticing fallacies as “a kind of sensitivity training” (1984, p. 132) since the reader is trained to be sensitive towards such tactics of persuading others. Lau (2011, p.174) provides a general description of fallacies by classifying them into four categories as shown in the following table:

Table 6

Types of Logical Fallacies based on Lau (2011)’s Classification

Type of Fallacy	Nature
Inconsistency	Making an inconsistent, contradicting, or self-defeating claim
Inappropriate assumption	Assuming something without good reason; ignoring relevant alternatives (e.g., begging the question and false dilemma)
Irrelevance	Appealing to irrelevant information (e.g., red herring and ad hominem)
Insufficiency	Evidence too weak to support conclusion (e.g., hasty generalization and weak analogy)

Lau, J. Y. F. (2011). *An introduction to critical thinking and creativity: Think more, think better*. Hoboken, NJ: Wiley, p. 174.

Mayfield (2007) also offers four broad categories in classifying common fallacies:

1. fallacy that manipulates through language
2. fallacy that manipulates through emotions
3. fallacy that manipulates through distraction
4. inductive fallacy

Ramage et al. (2010) offer three broad categories of fallacies based on appeals to logos, ethos, and pathos. There might be a flawed relationship between the statements of an argument attempt, which are referred to as logos fallacies. Logos fallacies include several fallacy types such as irrelevancy, false analogy, hasty generalization, slippery slope, oversimplifications, and begging the question. When the flawed relationship exists between the argument and the character of the person making the argument, these are called fallacies of ethos. Appeal to false authority, strawman, and ad hominem are some fallacies classified as fallacies of ethos. The flawed relationship could also be witnessed between the argument and the audience. Such flawed arguments, called fallacies of pathos, involve appealing to stirring symbols, appealing to emotional premises, and red herring. In the table below, more examples of fallacies pathos, ethos, and logos are illustrated:

Table 7

Types of Informal Fallacies based on Ramage et al. (2010)'s Classification

Fallacies of Pathos	Fallacies of Ethos	Fallacies of Logos
- Argument to the People (Appealing to Stirring Symbols)	- Appeal to False Authority	- Hasty Generalization
- Appeal to Ignorance	- Ad Hominem	- Part for the Whole
- Appeal to Popularity (Bandwagon)	- Poisoning the Well	- Post Hoc, Ergo Propter Hoc
- Appeal to Pity	- Straw Man	- Oversimplification
- Red Herring		- Begging the Question (Circular Reasoning)
- Appealing to Emotional Premises		- False Dilemma (Either / or)
		- Slippery Slope
		- False Analogy
		- Non Sequitur
		- Loaded Label or Definition

Ramage, J. D., Bean, J. C., & Johnson, J. (2010). *Writing arguments: A rhetoric with readings*. United States: Pearson.

Engel (1982) identifies three main categories of fallacies: ambiguity, presumption, and relevance. Each category encompasses certain sub-categories. Fallacy of ambiguity results from the language of the argument when the language could be interpreted in two or more ways. Amphiboly, also known as equivocation, fallacies of accent, and compositional fallacies are several subtypes of fallacy of ambiguity. The second type is the fallacy of presumption, which appears due to relying on unfounded or unproven assumptions. This type of fallacy subsumes false analogy, irrelevant thesis, begging the question, question-begging epithets, complex question, special pleading, and the straw person fallacy. The final category, fallacy of relevance, deals with issues which are irrelevant to the argument being proposed. Fallacy of relevance embodies ad hominem, ad populum, appeal to ignorance, appeal to authority, and appeal to tradition. In the following table, the types of fallacies belonging to different categories are summarized:

Table 8

A Summary of Informal Fallacies based on Engel (1982)'s Classification

Fallacies of Ambiguity	Fallacies of Presumption	Fallacies of Relevance
- Amphiboly (Equivocation)	- False Analogy	- Ad Hominem
- Fallacies of Accent	- Irrelevant Thesis	- Ad Populum
- Compositional Fallacies	- Begging the Question	- Appeal to Ignorance
	- Complex Question	- Appeal to Authority
	- Special Pleading	- Appeal to Tradition
	- Strawperson Fallacy	

Engel, S. M. (1982). *With good reason: An introduction to informal fallacies*. New York: St. Martin's.

The taxonomy of fallacies could be regarded as a useful guide to assess the quality of arguments in an essay. Evaluating the arguments depending on a list of fallacies is referred to as fallacy approach. In this approach, the assessment is based on the identification of specific fallacies that weaken an argument by trying to determine whether an argument includes any fallacies. A more recent approach to the fallacies is criterial approach whose focus is to evaluate arguments by determining whether an argument meets certain criteria, namely criteria of acceptability, relevance, and adequacy (Hughes, 2008). The principal distinction between the two approaches is their focus of attention.

2.10.2. Formal Fallacies vs. Informal Fallacies

There are two basic types of fallacies in the modern classification as formal and informal fallacies. Many of the fallacies contain errors made during the course of arguing in an informal manner in natural language. Formal fallacies are invalid arguments resulting from errors in the reasoning that do not occur due to the content of the arguments (Dowden, 2010). Undistributed middle and denying the antecedent are two instances of formal fallacies. Basically, formal fallacies are invalid or unjustified deductions or conclusions that occur due to the structure of the arguments. Yet, informal fallacies are invalid arguments which stem from errors in reasoning related with the content of the argument (Dowden, 2010). Hansen (2020) offers a clearer distinction of formal and informal fallacies by stating:

Although many of the informal fallacies are also invalid arguments, it is generally thought to be more profitable, from the points of view of both recognition and understanding, to bring their weaknesses to light through analyses that do not involve appeal to formal languages (para. 3).

An example of a formal fallacy is shown as in the following:

All eagles are birds.	All E are B.
All hawks are birds.	All H are B.
All eagles are hawks.	All E are H. (invalid argument & fallacious reasoning)

In the given example above, the error in reasoning results from the structure of the argument, not the content of it. To make the distinction clearer, the qualities of formal and informal fallacies can be summarized in the following table:

Table 9

A Comparison of Formal Fallacies and Informal Fallacies

Formal Fallacies	Informal Fallacies
• a pattern of reasoning that is always wrong • refer to the structure, arrangement, or form of an argument • errors in deductive reasoning • make the argument invalid • unacceptable deduction	• non-structural aspects, namely the content of an argument • usually emphasized in inductive reasoning • mostly errors of induction, but can also apply to deductive arguments

2.10.3. Formal Fallacies

2.10.3.1. Fallacy of Affirming the Consequent

Fallacy of affirming the consequent is an invalid conditional argument form. It consists of one conditional premise, another premise which asserts the consequent of the conditional, and a conclusion that asserts the antecedent. This type of fallacy is similar to the valid modus ponens (i.e., method of affirming), a valid argument form in logic. For instance:

- (i) If Jack was killed in a car crash, then he would be dead.
- (ii) Jack is dead.
- (iii) Jack is dead, so he died in a car crash.

The form of the argument, which is an invalid one, in the given example is:

- (i) If P, then Q.
- (ii) Q, therefore P.

Jack is dead, yet by looking at the premises given, one cannot infer that he died in a car crash. Further information is needed to reach this conclusion.

2.10.3.2. Fallacy of Denying the Antecedent

Similar to affirming the consequent, fallacy of denying the antecedent is another fallacious form of reasoning in formal logic. This type of fallacy occurs “when the minor premise of a propositional syllogism denies the antecedent of a conditional statement” (Gaul, 2018, p. 46). One mistakenly assumes that if the antecedent is denied, then the consequence must be denied, as well. This type of fallacy is similar to the valid modus tollens (i.e., method of denying), a valid argument form in logic. Modus tollens denies the consequent of a

conditional statement while denying the antecedent denies the antecedent of a conditional statement (Gaul, 2018). The difference can be more clearly shown in the following table:

Table 10

The Clarification of Modus Tollens vs. Denying the Antecedent

Modus tollens (valid)	Denying the antecedent (invalid)
If P, then Q.	If P, then Q.
Not Q.	Not P.
Therefore, not P.	Therefore, not Q.

Gaul, B. (2018). Affirming the consequent. In R. Arp, S. Barbone, & M. Bruce (Eds.), *Bad arguments: 100 of the most important fallacies in western philosophy* (pp. 42-46). Oxford: John Wiley & Sons. p. 46.

An example of fallacy of denying the antecedent is:

- (i) If he is writing his paper, then he is not resting in his room.
- (ii) He is not writing his paper.
- (iii) Therefore, he is resting in his room.

The form of the argument above is:

If A, then B.

Not A.

Therefore, not B. (invalid conclusion)

The fact that he is not writing his paper does not necessarily mean that he is resting in his room. He may be doing anything else in his room other than resting.

2.10.3.3. Undistributed Middle

This formal fallacy occurs when there are three terms. The middle term, the one that does not appear in the conclusion, is not distributed to the remaining two terms. An example of such fallacy is:

- (i) All ghosts are imaginary.
- (ii) All unicorns are imaginary.
- (iii) Therefore, all ghosts are unicorns.

The form of the argument is:

All A's are C's.

All B's are C's.

Therefore, all A's are B's.

Clearly, there might be some ghosts which are unicorns, but in the premises given, there is no information about how they relate to each other. The conclusion does not follow from the premises.

2.10.4. Informal Fallacies of Argumentation

In the current study, due to the variety in the taxonomy of logical fallacies, no classifications of logical fallacies are made. Rather, the explanations of logical fallacies in literature are taken as a basis and the most common types of logical fallacies found in the students' essays are targeted. In the following part, the 16 types of informal fallacies addressed in this study are elucidated and relevant examples are also given to clarify them.

2.10.4.1. Hasty Generalizations / Sweeping Generalizations

As Johnson (1998) states, "the fallacy of hasty generalization occurs when a generalization is formed on the basis of an unrepresentative sample" (p. 256). Engel (1982) further maintains that "the fallacy of sweeping generalization is committed when a general rule is applied to a specific case to which the rule is not applicable because of the special features of that case" (p. 105). Walton (1999a) also adds that when conclusions are reached on the basis of limited amount of evidence or some evidence is suppressed, one commits this type of fallacy.

Example 1: It is useless to go to university because successful entrepreneurs such as Bill Gates (Microsoft), Steve Jobs (Apple), and Zuckerberg (Facebook) all dropped out of university (Lau, 2011, p. 178).

Example 2: I recently read about a homeless man with a burst appendix who was turned away from a hospital emergency room to die in the street. It's obvious that hospitals don't care about people, only money (Cooper & Patton, 1993, p. 170).

2.10.4.2. False Analogy / Faulty Analogy

Johnson (1998) explains that "an argument from analogy draws a conclusion about something on the basis of an analogy with or resemblance to some other things. The

assumption is that if two or more things are alike in some respects, they are alike in some other respects” (p. 269). Walton (2008) further clarifies a faulty analogy stating that it occurs when the situations subject to comparison are not similar in terms of the specified aspect. One commits this type of fallacy when analogies are formed to propose arguments or explanations, yet the similarities between the two points in the comparison are actually too far to support the conclusion (Hansen, 2020).

Example 1: I don’t see what all the fuss is about guns. Of course, gun ownership wouldn’t be prohibited, you can kill someone with a cricket bat, but no one proposes to ban ownership of cricket bat (Bowell & Kemp, 2002, p. 143).

Example 2: I don’t want to die falling off a rock... But you can kill yourself falling in the bathtub, too. (Cooper & Patton, 1993, p. 162).

2.10.4.3. *Begging the Question / Circular Reasoning*

According to Trapp, Driscoll, and Zompetti (2005), begging the question is “a fallacy of acceptability that occurs when a debater introduces evidence that is the same as the claim” (p. 246). Johnson (1998) defines this type of fallacy as “assuming the conclusion in one’s premises” (p. 260). A famous example is “Descartes refers that the belief in the Bible is justified since it is God’s word and the belief that God exists is justified as it is written in the Bible”. In this sample, the two propositions lead back and forth to each other without a valid justification, which can clearly be seen in the following figure:

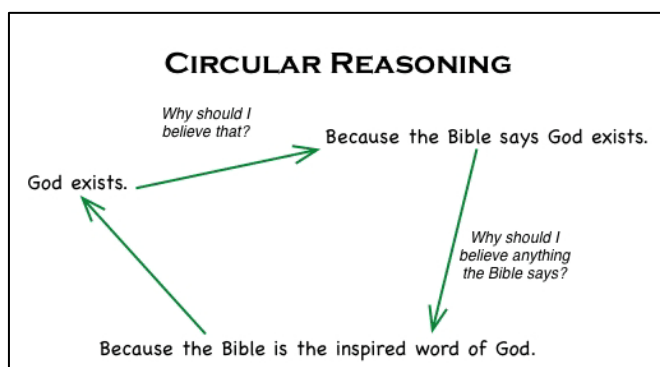


Figure 2. Circular reasoning (Taken from https://web.cn.edu/kwheeler/fallacies_list.html)

Example 1: The dinosaurs obviously became extinct because of a single catastrophic event such as a large meteorite or dramatic upheaval in the climate. This would mean that they did not undergo a gradual disappearance lasting many centuries or millennia, but that they were

wiped out practically overnight. The fact that they died out so quickly also means that there could only have been one cause for their extinction, not many as was once assumed; and that whatever the cause was, it was immense and final (Butterworth & Thwaites, 2013, p. 190).

Example 2: Abortion is murder because it is murder (Ramage et al., 2010, p. 406).

Example 3: That person is obese because he is too fat (Ramage et al., 2010, p. 406).

2.10.4.4. False Dilemma / Fallacy of Either Or / False Dichotomy

In Johnson (1998)'s definition, this fallacy is about "mistakenly assuming that there are only two possible solutions to some problem or that solving some problem consists of choosing between only two alternatives" (p. 262). It is sometimes referred to as *the excluded middle*. This fallacy occurs when a complicated issue is reduced to too few possibilities and the choice is made among these limited chances (Tomić, 2013). The person is forced to choose the remaining option by making the other option seem unacceptable (Ramage et al., 2010).

Example 1: Either you are in favor of recalling the mayor or you are a supporter of his political platform (Cooper & Patton, 1993, p. 164).

Example 2: Is human nature good or evil? (Lau, 2011, p. 176).

Example 3: Either we allow embryonic stem cell research, or we condemn people with diabetes, Parkinson's disease, or spinal injuries to a life without a cure (Ramage et al., 2010, p. 406).

2.10.4.5. Ad Hominem / Tu Quoque / Personal or Character Attack

Johnson (1998) defines this type of fallacy as "an attack upon the person rather than the person's ideas (p. 257). Ad hominem fallacy has three sub-divisions: abusive, circumstantial, and tu quoque. Sahlane (2012) explains ad hominem as an attempt to disqualify the opponent's legitimacy in the issue discussed. Walton (1987) adds that it is a forceful strategic move that has the capacity to terminate the argument in midstream altogether by undermining the opponent's view. It could even make the further argument pointless or ineffective.

Example 1: I don't see why we should accept the new Criminal Justice Bill when the Minister presented it to us in such an imperious way (Bowell & Kemp, 2002, p. 134).

Example 2: You can't expect insight and credibility from the recent book *The Feminist Challenge* because its author David Bouchier is, ... , a man (Cooper & Patton, 1993, p. 168).

2.10.4.6. Red Herring / Smoke Screen / Wild Goose Chase

Ramage et al. state that this fallacy takes its name from "the practice of using a red herring to throw dogs off a scent that they are supposed to be tracking (2010, p. 404). Similarly, Johnson (1998, p. 275) informs that the name stands for "the practice of using a herring" to "divert hunting dogs from the scent of a fox" and further adds that this fallacy occurs when some other issues, which seem to be relevant to the main issue discussed, are mentioned in order to distract the reader's attention from the key issue. Tindale (2007) states that this type of fallacy is different from the others since the position of the opponent is not necessarily challenged or refuted. Instead, another issue, which could either be related or totally unrelated to the main issue, is introduced to shift the focus.

Example 1: The judge should rule against the plaintiff's charge of sexual harassment against the president. The President is very popular, and presides over an extremely healthy economy (Bowell & Kemp, 2002, p. 141).

Example 2: A: Why are you not willing to support the gun-control legislation? Don't you have any feelings at all for the thousands of lives that each year are blotted out by the indiscriminate use of handguns?

A: I just don't understand why you people who get so worked up about lives being blotted out by handguns don't have the same feelings about the unborn children whose lives are being indiscriminately blotted out? Is not the sanctity of human life involved in both issues? Why have you not supported us in our efforts at abortion legislation? (Groarke & Tindale, 1997, p. 271).

2.10.4.7. False Cause / Post Hoc / Cause and Effect Fallacy

This fallacy type is also referred to as 'after this, therefore because of this'. It occurs when "an arguer concludes that one event or thing A causes another event or thing B when in fact there is no good evidence of a causal relation" (Johnson, 1998, p. 259). Walton (1987) states that this fallacy occurs as a result of the over-hasty conclusion that one event leads to another merely because they happen successively. Similarly, Scull (1987) concludes that "chance or

coincidence is sometimes mistaken for true cause and effect” (p. 252). Superstitions generally have their roots in such kind of fallacious thinking.

Example 1: Generally, people who make a will live longer than those who don't (Bowell & Kemp, 2002, p. 145).

Example 2: It was only three months after Harold got married that he started smoking pot. His wife must have got him started on the stuff (Damer, 2009, p. 58).

2.10.4.8. Oversimplification

The fallacy of oversimplification is observed when certain other reasons, results, or complexities related to an issue are ignored and something is made to appear simpler. Gula (2002) informs that “one of the prime manifestations of oversimplification is jumping to conclusions” (p. 313). This means that one may be using this fallacy when the causal relationships between the premises and the conclusion of an argument are not fully formed and the other possibilities are overlooked. Barnet and Bedau explain that “In the language of the Toulmin Method, oversimplification is the result of a failure to use suitable modal qualifiers in formulating one's claims or grounds or backing” (2011, p. 376). Regarding the prevalence of this fallacy, Arp et al. (2019) claim that individuals are surrounded by oversimplifications in their daily lives and refer to such claims as “poverty is the result of laziness; wealth comes from hard work; meat is murder; the global financial crisis was caused solely by corporate greed” (p. 286).

Example: All guns are only used for killing (Stapleton, 2001, p. 539).

2.10.4.9. Missing the Point / Irrelevant Conclusion / Non-Sequitur

The fallacy of irrelevant conclusion is somewhat the “parent of all other fallacies since every fallacy yields a conclusion that even if it be true is not related – that is, is irrelevant – to the premises of the argument” (Arp et al., 2019, p. 172). Arguments that have a conclusion unrelated to the premises in any necessary way suffer from the presence of irrelevant conclusion fallacy.

Copi et al. (2014) assert that although this type of fallacy may look like an intentional deception, it is usually the product of the sloppy thinking caused by the confusion one experiences while reasoning. This fallacy sometimes results from a gap in the chain of events, as well. Ramage et al. (2010) argue that “In effect, almost any fallacy could be called

a non sequitur because fallacious reasoning always indicates some kind of disconnect between the reasons and the claim” (p. 407).

Example: Genetically modified foods should be outlawed because they are not natural (Ramage et al., 2010, p. 407).

2.10.4.10. Slippery Slope / Domino Effect / The Camel’s Nose

According to Vleet (2011), slippery slope occurs when a person mistakenly claims that if a certain event or act happens, it will eventually result in a chain of events, usually ending in a dramatic or disastrous end result. van Eemeren and Grootendorst (1992) defines slippery slope as appealing to an unwanted series of events in opposing an argument. It is a type of fallacy since no one can ever know whether a series of events or results will necessarily be followed by one event or action. This type of argument is usually used as a fear tactic. To eliminate this fallacy, the writer must demonstrate the logical causal relationships among the subsequent steps leading to the conclusion (Nieminen & Mustonen, 2014).

Example 1: The decriminalization of cannabis would be just the start. It would lead to a downward spiral into widespread abuse of harder drugs like heroin and cocaine (Bowell & Kemp, 2002, p. 157).

Example 2: The Handgun Initiative would create a huge bureaucracy equal to that in Russia, where handgun ownership is a serious crime. And we all know that bureaucracy in Russia kills people by locking them up in gulags. Are you ready for gulags in the U.S.? (Cooper & Patton, 1993, p. 167).

2.10.4.11. Straw Man

Bennett states that straw man fallacy occurs when one’s real position or argument is substituted with another version of it that is misinterpreted, distorted, exaggerated (2012). Damer explains that “A straw man is a metaphor used to describe the caricature of an opponent’s argument that the faulty arguer substitutes for the flesh-and-blood original version” (2009, p. 204). This fallacy can be observed in three different forms; the argument may be distorted, oversimplified, or extended.

Example 1: Euthanasia is just wrong to kill the old and the sick to get rid of them (Lau, 2011, p. 182).

Example 2: How can you support giving doctors the right to end a person's life just because they decide that the person's life is no longer worth living; no one should have that power over another person's life, and doctors should not kill patients (Bowell & Kemp, 2002, p. 158).

2.10.4.12. Appeal to Pity

This type of fallacy occurs when there is an attempt to distract someone from the truth of the conclusion by trying to evoke pity (Bennett, 2012). Curtis (2001) observes that this fallacy is committed when one appeals to emotion rather than presenting actual evidence. When people fail to observe that sympathy or pity are not solid evidence and let the sympathy they have for others influence their actions (Hansen, 2020), their judgement could be affected by the fallacy of appeal to pity.

Example 1: Professor Hall, I must get an A in your course. If you don't give me an A, I won't be able to go to law school (Cooper & Patton, 1993, p. 180).

Example 2: Honorable judge, I should not be fined \$200 for speeding because I was distraught from hearing news of my brother's illness and rushing to see him in the hospital (Ramage et al., 2010, p. 404).

2.10.4.13. Bandwagon / Appeal to Popularity

Ramage et al. explain that "To board the bandwagon means to board the bus or train of what's popular" (2010, p. 403). Such arguments are fallacious since the popularity of something does not ensure that it has true merits. Jovičić (2004) clarifies this fallacy as accepting an argument to be true since the majority says it is so. In a similar vein, van Eemeren & Grootendorst (1992) points out that a claim is regarded to be correct as everyone thinks it is. Bandwagon appeals are commonly seen in advertising where a product is claimed to be excellent since it is popular. Yet, it must also be mentioned that at certain times, which means if the claim is formed based on reliable evidence such as research data, popularity may actually be relevant.

Example 1: 25 million people own a Maytag washer. Maybe they know something you don't know (Groarke & Tindale, 1997, p. 364).

2.10.4.14. Appeal to Authority / Appeal to Expertise

Johnson (1998) defines this fallacy as “an argument in which the testimony of someone believed to be an authority is cited in support of a conclusion” (p. 242). Yet, the person referred to is actually not an authority and therefore not the reliable source of information for some reason. This fallacy happens when one refers to non-experts that actually have no professional competence in the specific field such as celebrities endorsing certain products for commercial purposes. Walton (2006) offers six basic questions to ask to refrain from this type of fallacy:

1. Expertise Question. How credible is E as an expert source?
2. Field Question. Is E an expert in the field that A is in?
3. Opinion Question. What did E assert that implies A?
4. Trustworthiness Question. Is E personally reliable as a source?
5. Consistency Question. Is A consistent with what other experts assert?
6. Backup Evidence Question. Is E’s assertion based on evidence?

Example 1: It is always better to drink White wine with fish. Tony Blair says so, he must know what he’s talking about, he’s the Prime Minister (Bowell & Kemp, 2002, p. 139).

Example 2: Abortion to save the life of a mother is an irrelevant issue because a former surgeon general, a well-known pediatric surgeon, claimed that in all his years of surgical practice he had never seen a case in which such a dilemma had arisen (Cooper & Patton, 1993, p. 156).

2.10.4.15. Fallacy by Emotive Language / The Appeal to Emotion

Carter (2004) defines the fallacy by emotive language as “In an appeal to emotion, the idea is to win over either your opponent or the audience by invoking some kind of emotion. Patriotism, sympathy, hate, sexual desire, religious fervor, and fear can all be effective in this way” (p. 84). This fallacy occurs when facts and evidence are substituted with words that induce emotion with the aim of manipulating people into accepting the truth of the argument (Bennett, 2012). This type of fallacy is usually observable in the speeches of politicians. For instance, Copi et al. (2014) refer to Adolf Hitler’s speeches in which he tries to influence German people by emphasizing and manipulating patriotism and love of one’s country. In some other instances, it could also be possible to see some politicians or leaders utilizing this type of fallacy by appealing to their listeners’ or followers’ religions and beliefs.

Example: By rejecting God, you are rejecting goodness, kindness, and love itself (Bennett, 2012, p. 147).

2.10.4.16. Hypothesis Contrary to Fact

Bennett defines this type of fallacy as “offering a poorly supported claim about what might have happened in the past or future, if (the hypothetical part) circumstances or conditions were different” (2012, p. 214). The fallacy also refers to mentioning future hypothetical situations as if they are facts. Damer defines this type of fallacy as “treating a hypothetical claim as if it were a statement of fact by making a claim, without sufficient evidence, about what would have happened in the past if other conditions had been present or about an event that will occur in the future” (2009, p. 168). Since it would be almost impossible to know the consequences of an event that did not occur or has not happened yet, the imaginative constructs can only be probable stories one can speculate with no evidence or support.

Example 1: If only I had practiced a little more on my backhand, I could have won that tennis tournament (Damer, 2009, p. 168).

Example 2: If I could just live off campus, I could get a lot more studying done, my grades would improve, and I’m sure I would get a lot more sleep (Damer, 2009, p. 169).

2.11. Controversies around Informal Logical Fallacies

Not all scholars have embraced logical fallacies, though. There have also been various discussions surrounding the concept. Charles Hamblin, the author of *Fallacies* (1970), was criticized by Johnson (1990) due to having critical failures and further claimed that Hamblin actually committed fallacies in his treatment of textbook writers on the fallacies prior to 1970. ‘Begging the question’ has received the greatest amount of discussion among all the other fallacy types. Ikuenobe (2002) shares his concern about whether *begging the question* could be considered as a fallacy or not. He defines the nature of a fallacy from an epistemic point of view and then concludes that it is a mere error rather than a fallacy. In 2004, Truncellito delved into the same matter and tried to find a resolution as to the debate between those who consider begging the question a fallacy (e.g., Sorenson, 1996, as cited in Truncellito, 2004) and those who assert that it is not a fallacy type (e.g., Robinson, 1971, as cited in Truncellito, 2004). Ritola (2003) takes an opposing position by claiming that begging the question is logically valid and to verify its fallaciousness, one needs to use other

accounts than validity. Another major informal fallacy type studied was *hasty generalization*. Walton (1999a) approached hasty generalization from a theoretical perspective and alleged that it embraces three main subcategories: “the universal generalization of the ‘for all x’ type, the inductive generalization based on probability, and presumptive and defeasible generalizations” as a useful assumption in analyzing informal fallacies (p. 161).

In the literature, another controversial discussion exists concerning *ad fallacies*. According to Mill (1941), ad fallacies do not deserve to spend time on whereas some other researchers including Biro and Siegel (1992) and Walton (2000) paid attention to these types of fallacies and studied their occurrence in various written discourse types comprehensively together. Biro and Siegel (1992) evaluated fallacy of *ad hominem* and *fallacy from authority* and tried to explain them according to their theory of epistemic normativity of judgements. Similarly, Walton (2000) directed his attention to ad hominem in political argumentation in a case study where the focus was the written argumentation in Time magazine’s “Election Notebook” of 18 November 1996. Walton (1991) recognizes that argumentum ad hominem may sometimes be appropriate, not fallacious by stating that “some kinds of personal attack, in the appropriate context of discussion, can be legitimate arguments for questioning an arguer’s sincerity, objectivity, or commitment to truth and good reasoning” (p. 363). Likewise, Walton (1999b) devoted his attention to argumentum ad ignorantiam, in other words argument from ignorance or appeal to ignorance, in several political discourse types in which the claims were based on the lack of any evidence rather than logical evidence.

2.12. Teaching Approaches towards Logical Fallacies

According to Hitchcock (1995), most of the logical fallacies that are traditionally dealt with are actually not very common errors since they have become outdated and it is also harder to systematically address them. Therefore, it is suggested that rather than concentrating on the qualities of a bad reasoning and its products, the focus should be placed on how a good reasoning should be. Furthermore, it is also probable for the students to have an excessively critical approach and regard good arguments as fallacious. Blair (1995) makes a distinction between the concepts of inferencing and discussing an issue and adds that a lesson should concentrate on only one of these since they are different activities. Additionally, since logical fallacies are related to arguments, the lesson content should be prepared with a focus on

arguments rather than inferencing and logical fallacies should not be handled briefly and superficially; rather, they must be given in public discourse (Blair, 1995).

Griffin (1997) also asserts that logical fallacies could be taught and enjoyable methods can be used while doing so. She believes that logical fallacies should be evaluated in two separate categories depending on whether they are purposefully deceptive or not. She attributes Hitchcock's (1995) idea that learning about logic mistakes will hinder students' ability to form good arguments to the fact that the writer views logic fallacies as unintentional errors. She also claims that in this respect, logical fallacies that are committed deliberately to deceive others, which are different from the ones addressed with the traditional logic approach, need a different approach since they cannot be clearly identified.

2.13. Review of Relevant Studies in ELT

In a study conducted by Alagözlü (2007), whose main focus was to find out the elements of critical thinking and voice in Turkish EFL learners' argumentative essays, logical fallacies were revealed to be the most challenging aspect of the data analysis. In the study, 76 students' argumentative essays were analyzed and the number of fallacious statements and their categories were identified as in the following: oversimplification (41), straw man fallacy (36), irrelevant conclusion (24), hasty generalization (8), begging the question (1), and ad hominem fallacy (1).

In 2010, Atai and Nasserri conducted a study with 120 Iranian male and female learners who were advanced EFL/ESL learners of English. The purpose of the study was to examine if gender was an influential factor in the argumentative essays of the students in relation to the informal fallacies. The age and the discipline of the students were also part of the study as independent variables. As a result of examining 9 prevalent informal fallacies in the essays, no significant differences were observed between the independent variables (gender, age, discipline) and the overall informal fallacies.

Bardakçı (2010) conducted a study with 52 pre-service teachers studying in the ELT department at a state university in Turkey. The participants were all taking a course named Advanced Reading and Writing Skills. The aim of the study was to investigate whether raising awareness about logical fallacies had an influence of developing the reading skills of the participants. A test that comprised of 56 questions targeting 8 specific logical fallacies

was used. The results of the study revealed that teaching learners how to identify logical fallacies in the arguments and texts could improve their critical reading skills.

A study, with the integration of technology, was conducted by Amornchai et al. (2015) in Thailand. The purpose of the study was to create a virtual classroom environment, in which there was a performance task focusing on an argument involving a logical fallacy so as to advance the graduate students' analytical reasoning abilities, critical thinking and decision-making skills. The virtual classroom included three rooms, the first one being for logical fallacies. The students first studied in a fallacy class and then moved on to the other classes where they held discussions about argument topics. No information regarding the findings was mentioned in the specific study.

Indah and Kusuma (2015) conducted a study to investigate the logical fallacies in English department students' writings. The sentences in the claims of the students who took a critical writing course were analyzed by categorizing logical fallacies into three types as claims of fact, value and policy. The results demonstrated that fallacies related to claims of fact were the most frequent ones followed by claims of value and claims of policy. Hasty generalization (13), begging the question (11), and oversimplification (10) were revealed to be the most prevalent errors in reasoning.

In 2017, Khoiri and Widiati conducted a study to identify the logical fallacies in the argumentative essays of 40 Indonesian students studying in English Department. The study revealed that there were logical fallacies in the students' essays. The most significant implication of the study was about the role of explicit instruction on reducing logical fallacies. The researchers stated that some of the logical fallacies were very basic and could actually be avoided through simple and explicit instruction.

Not all the studies were conducted with university students. In Song et al. (2017)'s study, the participants were 1706 eight-grade students. The reasoning abilities of the students were measured through a critique task in an integrated argumentative reading and writing test. The results revealed that most of the participants in the study were not successful at identifying the fallacious statements or explaining what the problems in the claims were. Several challenges that the students experienced in critiquing arguments were identified as being off-task, inability to detect fallacious statements, not being able to explain the problem related to the reasoning, failing to connect their criticisms to the related parts in the text were mentioned.

Another study was conducted with 42 middle school seventh-grade students by Song and Sparks (2017). The study was concerned with designing an online argumentative reasoning task as part of an engaging scenario-based formative assessment with game elements. The name of the task is *Seaball*. In this task, what the students must do is to classify foods as junk food or not and identify appropriate evidence so as to support their decisions. Additionally, they are required to evaluate errors related to reasoning in the other students' arguments. The results indicated that the students were more successful at questions in which they were required to select relevant evidence compared to those in which they needed to identify logical fallacies.

2.14. Studies about Logical Fallacies in Other Fields than ELT

Diana, Eagle, Stamper, and Koedinger (2017) initially offered a plan to create a computational model of informal logical fallacies by building a cognitive tutor that teaches users how to detect certain prevalent informal fallacies. By using the tutor, a difficulty factors assessment (DFA), which is a kind of a cognitive task analysis, would be conducted with the purpose of evaluating the influence of two factors, namely the type of instruction and belief bias, on crowd workers' ability to identify informal logical fallacies in the media. Investigation of the type of instruction involves whether the targeted skill is more effectively learnt via induction, sense-making or a mixture of both. Belief bias, on the other hand, refers to the fact that individuals may tend to favor arguments subjectively if they agree with the conclusion. In the study, this was intended to be tested through 18 problems in line with the user's personal political orientation and 18 apolitical, which means politically neutral, problems.

Yet, when it came to the application of the suggested plan, Diana et al. (2018) limited the focus of the study to evaluating the type of instruction by leaving out the attempt to investigate the influence of belief bias in identification of informal fallacies. 86 individuals were recruited to take part in the online tutor system. Within the tutor, there were three types of problems participants could encounter: fallacy/no fallacy problems, expert-explanation problems, or self-explanation problems. 5 different instructional designs, in which there were different numbers of each problem type, were tested in the scope of the study. As a result, it was suggested by the study that though it was possible for the participants to learn 'appeal to ignorance' by means of inductive practice alone, instruction aiming at fostering deductive reasoning was more effective than inductive practice. Additionally, the

researchers proposed that the online tutoring system could be well integrated into educational curricula to help boost learners' critical thinking skills.

Stabile (2001) conducted a study with 6th grade students and the main purpose of the study was to develop learners' high level thinking skills that are found on Bloom's taxonomy by using philosophy-based materials. In the study, it was found that the learners showed a good level of success especially in detecting logic mistakes in advertisements. In another study conducted by Neuman (2003), 184 high school students from three different grade levels were the participants. The students were asked to carry out tasks related to informal reasoning errors and text comprehension exercises. The findings revealed that students who were successful in text comprehension studies were significantly more successful in determining informal logical fallacies.

In 2004, Weinstock, Neuman, and Tabak conducted a study with 281 secondary and high school students. Students were asked to identify invalid arguments that contain informal logical fallacies and explain them according to argumentation norms. In the study, scenarios including reference to the popular (ad populum), appealing to ignorance (ad ignorantiam) and person defamation (ad hominem) logical fallacies were utilized. The results showed that most of the students were successful at detecting the logical fallacies, yet they could not explain why they were fallacious. Weinstock et al. (2004) conducted another study to investigate the ability of 7th, 9th and 11th grade students to identify informal logical fallacies in terms of epistemological level and cognitive skills and it was found that 11th grade students detected more logical errors.

Neuman et al. (2004) conducted a study with 77 students studying in the 11th grade and focused on different scenarios based on arguments, in which the learners were asked to answer the questions related to the subject. As a result of the study, it was determined that most of the students realized that the arguments containing logical fallacies were not connected with the claim. However, it was also revealed that the truth value of a justification was evaluated according to the degree of personal plausibility rather than its connection with the claim. In another study conducted by Weinstock et al. (2006), 71 students studying in the 11th grade were asked to answer questions about 12 different scenarios based on argumentation. The results obtained from the research revealed that in the context of the text, 94% of the students did not find appeal to popularity, 94% of ad hominem and 89% of appeal to ignorance theoretically correct within the argumentation norms.

Vasilyeva (2017) conducted an interesting study and examined a collection of the transcripts of audio recorded mediation sessions held in the presence of a mediator with couples who were in the process of divorce. Using discourse analysis methods, the researcher scrutinized the logical fallacies committed during the sessions as well as the other person's responses to the fallacies and how s/he dealt with those wrong moves. In the study, the role of logical fallacies in hindering the development of an argumentative discussion as well as leading to dialectical shifts in natural discussions was determined to be significant.

Dinç (2019) investigated which logical fallacies were found in the newspapers and magazines, namely the printed media. In the study, a variety of pieces of news were analyzed in terms of the language by using content analysis method. The selected pictures and figures were also evaluated in the scope of the study. The results revealed that many logical fallacies were found in the newspapers and magazines that were analyzed in the study. Consequently, the researcher suggests that it is essential for the journalists, writers, and readers to have awareness about logical fallacies to avoid them.

CHAPTER III

METHODOLOGY

In this chapter, the research design of the study with all its components is elucidated. To this end, detailed information as to the context, sampling method and the participants, research design, the pilot study, data collection procedure, data collection instruments, and data analysis is presented.

3.1. Context

The current study was conducted at a state university. The participants in the study were taking a compulsory English course. This course aims to help students reinforce their reading, listening, speaking, and writing skills. Among them, improving writing and speaking skills of the students is more prioritized. There is no explicit grammar teaching and there is a relatively less focus on teaching vocabulary compared to the other four skills. Academic writing conventions such as APA, summarizing, paraphrasing, quoting, and analyzing writing prompts, etc. are targeted as well as giving students practice in argumentative essay writing. It is an integrated-skills course in which two themes are addressed throughout the semester. The first one is the theme of the course book and the second theme is decided by the instructors individually. Each instructor designs about five weeks of the course around a theme they are interested in, which allows for teacher autonomy and offers a sense of variety and flexibility.

The registered students are from different departments and the materials covered in class are not targeted towards their departmental content. Because it is a technical university, especially engineering students are quite busy and some may tend to neglect English courses. Although there are students with internal or external motivation to learn English, especially academic English, there are also students with less urge to learn English. There are also

international students in classes; therefore, Turkish students are usually motivated to speak in English during lessons so as to communicate with them.

3.2. Sampling Method and the Participants

The participants of the study were chosen based on convenience sampling since it would be much easier and more practical to reach her own students for the researcher especially for teaching and feedback purposes. Data was collected from 2 classes which the researcher was teaching during the process of data collection. All the participants were guaranteed confidentiality at the beginning of the study. A total of 43 tertiary students took part in the current study. In Class 1, 20 students participated in the study, 11 of whom were male and 9 were female. In Class 2, the total number of the participants was 23, 13 of whom were male and 10 were female. The classes are randomly formed without considering the departments of the students; therefore, the participants were from different disciplines. The level of their English also varies, which also differentiates them in terms of their success in written production. While students from engineering departments tend to have difficulty in writing essays, which could be due to their dealing mostly with numerical data rather reading texts, those studying in the departments in which students are assigned more reading materials related to their departmental content, such as social sciences or education, are usually more involved in reading texts and writing prolonged response essays. Detailed information about the gender and nationality of the participants could be found in Table 11 and Table 12.

Table 11

Information about the Participants in Class 1

Participant	Department	Participant	Department
1 – T – M	Electrical – Electronics Engineering	11 – T – F	Department of Economics
2 – I – M	Electrical – Electronics Engineering	12 – T – F	Electrical – Electronics Engineering
3 – I – M	Aerospace Engineering	13 – T – M	Electrical – Electronics Engineering
4 – T – M	Department of Chemistry	14 – T – M	Industrial Engineering
5 – T – F	Mathematics Department	15 – T – F	Industrial Engineering
6 – T – M	Mathematics Department	16 – I – F	Industrial Engineering
7 – T – F	Mathematics Department	17 – T – F	Department of City and Regional Planning
8 – T – M	Department of Business Administration	18 – T – F	Department of Economics
9 – T – M	Department of Business Administration	19 – T – M	Industrial Engineering
10 – T – F	Department of Business Administration	20 – T – M	Industrial Engineering

The letters stand for: T: Turkish I: International F: Female M: Male

Table 12

Information about the Participants in Class 2

Participant	Department	Participant	Department
21 – T – M	Political Science and Public Administration	33 – T – M	Department of City and Regional Planning
22 – T – F	Department of City and Regional Planning	34 – T – F	Department of City and Regional Planning
23 – T – M	Aerospace Engineering	35 – T – F	Department of City and Regional Planning
24 – T – F	Department of City and Regional Planning	36 – T – F	Department of City and Regional Planning
25 – T – F	Department of Physics	37 – T – M	Mathematics Department
26 – T – F	Mathematics Department	38 – T – F	Political Science and Public Administration
27 – T – F	Department of Statistics	39 – T – M	Mathematics Department
28 – T – M	Geological Engineering	40 – T – M	Department of Civil Engineering
29 – T – M	Aerospace Engineering	41 – T – M	Industrial Engineering
30 – T – M	Department of City and Regional Planning	42 – I – M	Computer Engineering
31 – T – M	Political Science and Public Administration	43 – T – F	Political Science and Public Administration
32 – T – M	Aerospace Engineering		

The letters stand for: T: Turkish I: International F: Female M: Male

3.3. Research Design

In this study, a mixed method approach was employed to achieve a deeper understanding of the phenomena. In studies that employ a mixed method, both quantitative and qualitative

data are obtained. Creswell (2014) identifies the qualities of qualitative and quantitative studies and explains that a quantitative study “describes a research problem through a description of trends or need for an explanation of the relationship among variables” (p. 13) whereas qualitative studies “explore a problem and develop a detailed understanding of a central phenomenon” (p. 16). In mixed method studies, the combination of both methods enables researchers to research the problem in a more comprehensive way. Creswell (2014) refers to the benefit of employing a mixed method approach and maintains that “the core argument for a mixed method design is that the combination of both forms of data provides better understanding of a research problem than either quantitative or qualitative data by itself” (p. 22). Patton (1990) also asserts that a research design could be empowered through triangulation of data which is achieved by combining methodologies in examining a phenomenon as the use of only one method makes a study more vulnerable to mistakes resulting from the use of the specific method compared to the studies in which various methods are used which offer cross-data validity checks.

In the present study, a pre-experimental design was adopted. In pre-experimental designs, there is only experimental group or groups, but no control or comparison group, which make them the most basic form of experimental design (Ary et al., 2010). In pre-experimental designs, variables are not manipulated or controlled. Additionally, selecting and assigning the subject group or groups to the treatment is not random. In the current study, one-group pre-test post-test design will be followed in which only the experimental group which consists of students from 2 different classes determined based on convenience sampling will be examined. Ary et al. (2010) describe the steps of one-group pre-test post-test design as:

1. the dependent variable is measured by a pre-test
2. the subjects are exposed to the treatment
3. the dependent variable is measured by a post-test
4. the researcher evaluates the results gathered from the pre-test and post-test

In this study, there is no control group because of two reasons. Since it is a departmental course, there is always a possibility that students could drop the course suddenly at the beginning, middle or end of the semester. Due to the unpredictability of whether the number of participants would decrease unexpectedly, there was no control group in the current study. Additionally, due to the same possibility mentioned earlier, the study was conducted with two classes not to end up with a very low number of participants in case some students

dropped the course or stopped attending. The reason is that the strength and reliability of the statistical test increases as the number of individuals participating in the study increases. In the previous semester, though the number of the students registered to the course was 22 at the beginning, the number of the non-attending students increased gradually and the total number of attending students at the end of the semester dropped to 13. If there are two or more groups in a study, selecting the number of individuals in the groups equally reduces the standard error and since it would not have been possible to ensure having an equal number of learners in the control and experimental groups, the researcher decided to work with the experimental group only and compare the participants' pre-test and post-test results.

In the present study, a qualitative approach is adopted in analyzing student essays and interpreting interview data. As claimed by Cresswell (2014), adopting a qualitative methodology is beneficial when the researcher is "the instrument of data collection who gathers words or pictures, analyzes them inductively, and focuses on the meanings of participants" (p. 64). Qualitative research was suitable for this study due to several reasons. Since qualitative research enables one to collect data in a variety of ways such as conducting interviews or observations, the researcher integrated the qualitative methods to better understand the research phenomenon. Furthermore, a qualitative approach was adopted owing to offering flexibility during the process of the study. The researcher could make changes or adaptations when it was noticed that more information needed to be added or omitted over the course of the treatment. The feature of flexibility was also significant for the individual interviews since the interview questions could be re-structured depending on the flow of the interviews. Moreover, since qualitative research supports small sample sizes, it was a quite suitable method to adopt for the current study in which the number of the participants was not that high.

In this study, the first way of obtaining qualitative data was analyzing the fallacious claims of the students in the argumentative essays and their responses to the semi-structured interview questions. The logical fallacies that were found in the arguments of the students were identified by following *fallacy approach* which is based on the identification of logical fallacies by examining whether an argument has any fallacies and doing content analysis. Additionally, the semi-structured individual interviews conducted at the end of the data collection process revealed qualitative data about the views of the participants regarding the treatment process. To analyze the responses of the students, content analysis was done. Codes, categories, and themes were determined analyzing the utterances of the respondents.

Consequently, the qualitative data collected by utilizing both qualitative data collection tools helped the researcher obtain valuable and detailed information about the treatment.

For the purpose of evaluating the results obtained from the qualitative data, quantitative method approach was utilized in the data analysis process. Dörnyei (2007) explains that quantitative method has certain characteristics peculiar to it including the use of numbers, categorizations, the use of variables, expressing numerical data acquired from statistical tests, and generalizing the results gathered. In this study, the qualitative data obtained from the student writings were quantified since it would be easier, more practical, and clearer to refer to numbers while discussing the results of the study. Considering the research questions that were formulated at the beginning of the study, the mere qualitative identification of the results would not be sufficient to answer, especially the first and the second questions. Though some qualitative researchers may assert that qualitative research is completely different from quantitative research and they do not share any common properties, when one needs to report findings such as frequencies or averages, numerical data and statistics are appropriate ways for qualitative research, as well (Krathwohl, 2009). Hence, to determine the most common types of logical fallacies in the essays and finding out whether the number of the errors would decrease after receiving teacher corrective feedback, quantifying the qualitative data was essential. The number of logical fallacies found in student essays were counted to quantify the results after each draft.

To quantify the data obtained from student writings, the number of errors made by each participant related to each separate type of logical fallacy targeted in the study were recorded in a table (see Appendix 19 for a sample). Then, the total number of errors made by each participant in each writing was calculated and tabulated (Appendix 20). Additionally, the total number of errors related to each type of logical fallacy in each writing as well as the total number of logical fallacies in each writing and the percentages of the errors related to logical fallacies were also calculated to better interpret the quantitative data. Moreover, the corrections made by the students in the 2nd drafts of the writing tasks were categorized as *correction*, *false-repairs*, and *no corrections*. All the errors in the 1st drafts were analyzed and the corrections in the 2nd drafts were recorded in the relevant category with numbers. As for the analysis of the interview results, the frequencies of the responses were determined to understand the general approaches of the participants. Apparently, it is possible to say that though the main source of data collection was the qualitative one in this study, quantification

of the results obtained from it had a significant role in understanding and interpreting the findings.

3.4. The Pilot Study

The pilot study was conducted prior to the actual study with 20 EAP students and it was completed in five weeks. In the 1st week, the students were asked to read the consent form and all the students registered in the class volunteered to participate in the study. Following their consent, the students took writing task 1. The researcher had come up with a preliminary draft of the Teaching Guide considering the written products of her students in the previous semester before the pilot study started and in this primary version, there were no codes to label logical fallacies (Appendix 2). This was the first step in deciding which logical fallacies to include in the pilot study. Considering the vast variety of logical fallacies that could be encountered in written works, it was essential to limit the types of fallacies to focus on in the study. The 1st writing was utilized to elaborate on the preliminary draft of the Teaching Guide, which would guide the students about how to understand and fix the fallacious claims throughout the whole process. Depending on the types of logical fallacies that were commonly observed in Writing Task 1, the researcher added or excluded certain types of logical fallacies, which gave the Teaching Document its final form (Appendix 3) for the pilot study. The 1st writing was also used to cover logical fallacies through explicit instruction. To this end, samples of fallacious sentences from the students' pre-tests were chosen and collated on a Word document. At the beginning of the two-hour input session, the students were given the document containing the fallacious sentences and were asked to identify any content-related problems by working with a partner. The students looked quite involved and challenged at the same time while they were trying to find the errors. Yet, they had quite a lot of difficulty and were not able to identify the errors without teacher's guidance. Through discovery learning, the students became interested in the focus of the lesson and they were intrigued by logical fallacies. All the fallacious claims in the document were analyzed one by one and when the students could not identify the problem, teacher's guiding questions helped them notice those.

After covering logical fallacies, the Teaching Guide (Appendix 3) was distributed and the students were informed about how to utilize it. As a production activity, the students were asked to write two sentences containing logical fallacies and comment on the fallacies that are found in their friends' sentences. Lastly, the students' essays were given back with

written feedback on them targeting logical fallacies. The students made the necessary amendments in terms of logical fallacies by referring to the Teaching Guide in order to eliminate the logical fallacies that existed in their pre-tests. The 1st and 2nd drafts of writing task 1 were later compared to see whether the number of logical fallacies decreased in the 2nd drafts. In the following week, the students wrote their 2nd argumentative essay. Similar to writing task 1, the 1st drafts and 2nd drafts of their essays were compared to see whether a decrease was observed as a result of teacher corrective feedback. The students wrote another argumentative essay and the same procedure was followed for writing task 3, as well. The students wrote one last essay, which was utilized as the post-test. At the end of the process, individual interviews were held with several participants to inquire about their perspectives. Some basic questions were directed to the interviewees and follow-up questions were formulated according to the flow. As a consequence of the pilot study, the following salient points were recorded to take into consideration while planning the actual study:

- The codes in the Teaching Guide were found to be useful and practical by the students. Therefore, in the actual study, coded feedback continued to be used to avoid potentially long and repetitive teacher corrective feedback.
- Explanations and examples about logical fallacies were kept in the Teaching Guide in the actual study. Additionally, a new section was added to offer students some tips about how to avoid committing logical fallacies as well as fixing the existing errors of reasoning. This section was not included in the pilot study to encourage students to discover their own strategies. The researcher just orally mentioned certain strategies to avoid logical fallacies while dealing with the fallacious sentences. Yet, it was observed that the students needed certain overall hints on which they could build their own strategies. This was also useful for those students whose level of proficiency was lower. The researcher concluded that through a bit of guidance, students could be encouraged to fix more mistakes; therefore, how to avoid tips were included in the Teaching Guide in the actual study.
- In the pilot study, no practice activities were done following the instruction in class. There was only one production activity. However, throughout the process, it was observed that the students needed more controlled practice activities to digest the input they received. Consequently, a variety of exercises were prepared and used to consolidate logical fallacies in the actual study.

- The interview questions were helpful in offering a basic insight into students' views on the pilot study (Appendix 4). Yet, it was revealed that more comprehensive questions were needed to grasp further insight. Additionally, some of the questions proved to be not fully related to the process of the study but involved the comparison of past and present learning conditions. It was observed that either the interviewees could not very clearly remember their past learning experiences or the focus of the interview shifted from the present to the past. Thereupon, those questions were eliminated and replaced with more to-the-point ones directed at understanding the current learning experiences of the students regarding the treatment itself. The semi-structured nature of the individual interviews proved to be beneficial to direct further questions depending on the flow of the conversation. Therefore, semi-structured interviews were conducted in the actual study, as well.
- As an addition to their learning experiences of logical fallacies, the students were enquired about whether they would prefer to write about topics they could relate to their personal lives or more general topics. In class, before the writing tasks, the students were given prompt choices to see whether they would write more comfortably if the topic in the writing prompt could be related to their lives. One prompt was about a topic which they could easily relate with such as education while the other prompt was about a not so familiar or not easily personalizable topic such as globalization. The students voted for their preferences of the writing prompts and the majority preferred to write about topics which were more personalizable. Thus, the researcher decided to start with topics that the students can more easily relate with and then move on with more abstract topics by increasing the challenge level gradually in the actual study.

3.5. Data Collection Procedure

Before delving into the concept of logical fallacies through instruction and teacher corrective feedback, the students were first given input on argumentative essay writing since they would be expected to write argumentative essays within the scope of the study. The focus of the instruction was mainly on organization (i.e., how to write an introduction, thesis statement, body paragraphs, topic sentences, and a conclusion paragraph) and general aspects of content (i.e., main idea, supporting details, giving examples etc.) Additionally, though some of the students might have been familiar with the concept of logical fallacies, the researcher decided it would be useful to give explicit instruction on fallacies to share the

same understanding about them and meet on a common ground. The students received input on logical fallacies and were given the chance to have practice on them after the pre-test.

Throughout the treatment process, the students wrote three essays as summative assessment tasks on which they got detailed feedback on the fallacious arguments from the teacher and were given some quality time to act upon the feedback and make the necessary amendments to produce their 2nd drafts. While giving feedback, number coding was utilized to direct students' attention to logical fallacies and check the Teaching Guide to make sense of the feedback. There was also an explicit focus on the quality and development of ideas, organization, language use and the use of APA, which are all components of the writing rubric used for grading the written work of the students to improve the overall quality of the students' essays. Content, organization, language use, and APA were graded according on the rubric. Yet, rather than assigning a grade to the students' essays in terms of logical fallacies, the frequencies of the logical fallacies that existed in the essays were determined due to institutional rules and regulations. At the end of the term, the essays produced in the 4th writing task were evaluated as the post-test, namely the end-product of this cycle. The 4th essays were utilized to check whether corrective feedback given on the previous three essays was effective in terms of decreasing the number of logical fallacies in students' written production. A comprehensive summary of the data collection process is presented in the following table:

Table 13

Treatment Procedure

Prior to the study	• Introduction to argumentative essay structure (2-hour input on organization)
1 st Week	• Taking the consent form • Taking the pre-test writing (Writing 1 – 1st Draft) • Teaching on Logical Fallacies <i>Pair work – Analyzing the selected fallacious student sentences</i> <i>Whole class – Discussing the sentences containing logical fallacies</i> <i>Analyzing the Teaching Guide and how to utilize it</i> <i>Introducing the Self-Evaluation Sheet</i>
2 nd Week	• Practicing Logical Fallacies <i>Practice Activity 1 – Identifying the fallacy - fill-in-the-blanks exercise</i> <i>Practice Activity 2 – H5P Multiple choice exercise</i> <i>Practice Activity 3 – Evaluating the argument in a letter to the editor</i> <i>Practice Activity 4 – Does evidence support or weaken the claim?</i> <i>Production Activity – Forum discussion activity</i>
3 rd Week	• Getting the pre-test writing with feedback on it • Completing the 2nd draft of the pre-test writing (Writing 1 – 2nd Draft)
4 th Week	• Taking the 2nd writing (Writing 2 – 1st Draft) • Getting feedback on the 1st draft • Completing the 2nd draft of Writing 2 (Writing 2 – 2nd Draft)
5 th Week	• Taking the 3rd writing (Writing 3 – 1st Draft) • Getting feedback on the 1st draft • Completing the 2nd draft of Writing 3 (Writing 3 – 2nd Draft)
6 th Week	• Taking the post-test writing (Writing 4) • Conducting individual interviews

3.5.1. First Writing Cycle**3.5.1.1. Pre-test (Writing Task 1 - Draft 1)**

The 1st writing task was utilized as the pre-test in which the current proficiencies of the students were determined in terms of logical fallacies prior to giving corrective feedback and explicit instruction. The students produced their essays in two class hours on an online platform called Zoom. They were monitored by the researcher to ensure that they produced the essays on their own and it was their original work. The prompt for the 1st essay was:

Technological devices have become very common and technology is now part of our lives. What are the advantages and disadvantages of having technology in modern young people's lives? To what extent do you agree with the idea that modern people, including children, are too dependent on technology and if we could get rid of technology, our lives would be better without it? Use specific examples to support your ideas.

The pre-tests were used to identify the most common logical fallacies in the students' argumentative essays. Then, the Teaching Guide used in the pilot study was adapted by

adding a few more types of fallacies that were observed in the students' pre-tests and how to avoid tips. In this way, the Teaching Guide was given its final form to be used in the present study (Appendix 5).

3.5.1.2. Teaching on Logical Fallacies and Practice

Due to the Coronavirus disease (COVID-19) pandemic, education was in the online mode throughout the process of data collection in the current study. The students were introduced to the input regarding logical fallacies via live lessons held on an online program called Zoom. Since the program let the researcher monitor and guide the students by offering video communication as well as providing the opportunity to work either in pairs or in groups in virtual rooms called Breakout Rooms, almost no challenges were experienced in the data collection process.

Once the identification of the fallacies in the pre-test was over, explicit instruction was given to the students regarding logical fallacies. At the start of the class, the focus of the lesson, logical fallacies, was not made obvious to the students so as to encourage them to discover it themselves through self-explanation rather than resorting to expert-explanation method (Diana et al., 2018). Four class hours were allocated for teaching and practicing logical fallacies with all the activities specified as follows. Initially, some samples of different types of fallacies found in the students' pre-tests were collated on a document (Appendix 6) and the students were asked to identify and explain the problems in the given samples by working in pairs in Breakout Rooms. This allowed them to notice and discover logical fallacies before the instruction was given. The statements were taken from student essays for personalization purposes. As predicted, the students were interested in working on the statements after realizing that the samples were their or their peers' own statements. Utilizing real claims from the student essays served as an internal motivation factor while introducing the concept of logical fallacies. Following this, a whole class discussion was held to discuss the fallacious statements more in depth so that the learners could better understand why a claim or an argument becomes fallacious. Later, the students were asked to offer alternatives to correct the fallacious statements and the proposed alternatives were also discussed as a whole class. Following this, the Teaching Guide was analyzed and discussed about how to utilize it (Appendix 5). Next, several exercises were done to give students some controlled practice in being able to identify the type of the fallacy in the given sentences (Appendix 7) to help them digest logical fallacies more. Finally, students were asked to write fallacious statements

themselves and the others in the class tried to identify the type of fallacy in their sentences (Appendix 8).

3.5.1.3. Second Writing (Writing Task 1 - Draft 2)

After teaching logical fallacies and doing some practice on them, the 1st drafts of the essays were given back to the students with the written corrective feedback on them. The fallacious statements in the students' essays were underlined and instead of writing comments or asking questions while giving feedback, the fallacy code that corresponds to the fallacy in the argument was written near it. Students wrote their final drafts by making the necessary amendments based on the corrective feedback by checking the Teaching Guide to fix their fallacious claims.

3.5.2. Second Writing Cycle

3.5.2.1. Third Writing (Writing Task 2 - Draft 1)

For the 2nd argumentative essay, just like the pre-test, the students had 2 hours to produce their essays. The prompt for the 2nd essay was:

Should English be compulsory in schools? Use specific reasons and examples to support your views.

The essays, with feedback related to logical fallacies on them, were given back to the students and they wrote the second draft of their essays by referring to the Teaching Guide and acting on the corrective feedback.

3.5.2.2. Fourth Writing (Writing Task 2 - Draft 2)

The 1st drafts of the essays, with feedback related to logical fallacies on them, were given back to the students and they wrote the final draft of their essays outside class by referring to the rubrics and acting on the corrective feedback.

3.5.3. Third Writing Cycle

3.5.3.1. Fifth Writing (Writing Task 3 - Draft 1)

For this writing task, the students had 4 hours to write their essays. The prompt for the 3rd essay was:

Explain why creating of fake online identities has become so popular among social media users. In your opinion, which two reasons are the most common? Justify your answer by giving specific explanations and/or examples.

3.5.3.2. Sixth Writing (Writing Task 3 - Draft 2)

The 1st drafts of the essays, with feedback related to logical fallacies on them, were given back to the students and they wrote the final draft of their essays by referring to the Teaching Guide and acting on the corrective feedback.

3.5.4. Post-test (Seventh Writing)

The 4th writing task was utilized as the post-test to check if corrective feedback and explicit instruction of logical fallacies contributed to reducing the fallacious claims in students' argumentative essays. The 4th writing was the final outcome of the whole cycle. The prompt for the 4th writing was:

Explain two of the differences between the assumptions of Anthropocentrism and Ecocentrism. To you, which of these two philosophies is more appropriate to help build a better world in the future? State your reason(s) clearly and support it/them with specific explanations, details, and/or examples of your own.

3.6. Data Collection Instruments

Two different data collection instruments were utilized to gather data; student writings and individual interviews. Student writings were analyzed to find out the frequencies of logical fallacies in the students' essays and check if they were corrected or not based on teacher corrective feedback. Additionally, individual interviews were held with 13 volunteer participants to have a deeper understanding of their perspectives as to the treatment procedure at the end of the semester.

3.6.1. Student Writings

In this study, the fallacious claims in argumentative essays of tertiary level students became the basis to discover the critical thinking processes of the learners when writing their arguments. The data needed to identify the pattern of fallacies were in the form of sentences in the students' argumentative essays. 301 essays of 43 freshmen undergraduate students in a must English course were analyzed in terms of the frequency of logical fallacies found in their essays and corrective feedback was based on them. The sentences were not analyzed in isolation and the unity in the whole essay was taken into consideration to identify the fallacious claims.

Three of the essays were written as part of the formative assessment and corrective feedback was given whereas the fourth essay was written for the purpose of summative assessment. The last essay was the end product which reflected the ultimate attainment of students regarding the understanding of logical fallacies at the end of the treatment. After producing their first drafts, the students got corrective feedback on logical fallacies and worked on producing their arguments in a more sound way by utilizing the Teaching Guide.

3.6.2. Individual Interviews

To gain further insight into the matter, follow-up semi-controlled individual interviews were conducted to gain in-depth information of the students' awareness about logical fallacies and probe their perceptions as to whether the feedback they received from the teacher was effective in identifying and avoiding logical fallacies in their essays. The interviews were conducted due to the fact that it is also essential to allow the students to share their thoughts for a better understanding of the matter and discovering a different perspective than the teacher's and through the interviews, researchers can obtain information related to a variety of components that are not directly observable (Mackey & Gass, 2005).

In the current study, 13 students, which was considered an optimal number, were interviewed based on their willingness to participate in the individual interview. Some other volunteer students were not interviewed due to the fact that the criterion of the researcher was to select students with different proficiency levels whose performances varied in the writing tasks. This was essential for gaining insight into both the high achievers' and the low achievers' views about the whole process. The interview questions were prepared in light of the relevant literature and two experts' opinions were obtained before being used in the study (Appendix

21). The interviews were conducted in Turkish since the participants felt more comfortable expressing themselves in their native language. Considering their varying proficiency in speaking skill, the researcher thought it would provide a more equal chance to the students in terms of allowing them to convey their ideas without worrying about their speaking abilities. Each interview took around 15-20 minutes and they were all recorded. The semi-structured interview questions were utilized to investigate the students' opinions and probe their perceptions. Semi-structured interview type was preferred since it allows researchers to ask further open- or close-ended questions following the questions formulated for the clarification of the reasons (Adams, 2010). The interviews were fully transcribed and translated into English by the researcher afterwards. Following this, the interview data was coded using content analysis and the relevant codes, categories, and themes were formulated.

3.7. Description of the Materials Used in the Treatment

3.7.1. The Teaching Guide

The Teaching Guide was developed and finalized following certain steps. Initially, the researcher prepared a preliminary list of logical fallacies that can commonly be found in student essays by analyzing the writings of her previous students from the previous semester before piloting. This was essential to narrow down the types of fallacies to focus on since the types and classifications of them are quite varied. Considering that these students would share similar characteristics with the participants of the pilot study and the actual study, it was a rational step to narrow down the logical fallacies. In this version, there were nine types of logical fallacies as well as their explanations and examples (Appendix 2). The Teaching Guide that was used in piloting was finalized by developing this first version and adding further information based on the pre-test. In this version, five new types of logical fallacies were added after analyzing the pre-tests since they seemed to be common, as well.

As another addition, codes were assigned to each fallacy in line with coded feedback, which was acknowledged as a beneficial and practical method of giving and receiving feedback in the literature (Appendix 3). Ultimately, based on the pre-tests of the students in the actual study, two new types of logical fallacies were added to the list and the final version of the Teaching Guide consisted of 16 types of logical fallacies (Appendix 5). Additionally, based on the observations in the piloting process, a new column was added to give useful tips to students about how to avoid logical fallacies targeted and what can be done to fix them.

The Teaching Guide was the most significant material in the study since it was essential for the students to make sense of coded corrective feedback, understand why their claims are fallacious, see an example sentence to comprehend why their claims are fallacious, and learn about certain strategies and tips to fix the erroneous claims and propose more sound arguments. In this way, the Teaching Guide both acted as a source of information that enabled the students and the researcher to have the same understanding of each type of fallacy and decreased the dependence on the teacher by allowing them to study on their own whenever they needed.

3.7.2. Sentence Analysis Activity

To introduce the concept of logical fallacies in a meaningful, cognitively challenging, and enjoyable way, a sentence analysis activity was prepared (Appendix 6). In this activity, there were 14 fallacious claims that were collated from the essays of the students written as the pre-test. The claims had different types of fallacies. The main purpose of this activity was to introduce logical fallacies by letting the students discover them before they were given instruction on them. Additionally, the researcher took the sample erroneous claims from the students' own essays to arouse more interest and help the students become more engaged in the activity by encouraging them to discover the real errors in their own work rather than working on the claims fallaciously proposed on purpose. This activity also served as the stepping stone for introducing, analyzing, and explaining how to utilize the Teaching Guide. Based on this activity, the codes, types of fallacies, explanations, examples, and how to avoid tips were analyzed with the students.

3.7.3. Controlled Practice Exercises

Following the input given on logical fallacies, a variety of controlled practice exercises were done to consolidate logical fallacies (Appendix 7). The activities were mostly about the identification of the type of fallacies in the claims. In the pilot study, it was observed that the practice activities were limited and insufficient in giving the students enough chances to practice logical fallacies. It was observed that it took some time for the students to get used to this new concept, remembering the names of the fallacies and identifying the specific fallacy in a sentence. Therefore, more practice activities were utilized to consolidate logical fallacies before working on fixing the fallacious claims in their essays in the actual study.

3.7.4. Forum Discussion Activity

In order to have further practice about logical fallacies, a forum discussion activity was utilized (Appendix 8). This activity was conducted using the forum option of the class webpage. The students were asked to articulate two fallacious claims choosing two topics among the given options. The purpose of providing a variety of topic options was to help students better realize that logical fallacies could occur in a multitude of contexts. After the students wrote their sentences, they were asked to comment on one of their friend's post. They had two responsibilities: identifying the type of fallacy and explaining why the claim was fallacious. Finally, the writer of the claims needed to check the identifications and explanations of their friends and comment on whether they were correct or not. The purpose of this activity was to encourage the students to think critically to produce and analyze fallacious claims as well as exposing them to a variety of samples in an interactive and enjoyable way.

3.7.5. Self-Evaluation Checklist

A self-evaluation checklist was suggested to the students after going over the Teaching Guide (Appendix 10). The students were informed about the possible benefits of using this sheet in terms of evaluating themselves and keeping a track of their improvement. It was also suggested that they could utilize the sheet like a checklist to determine the quality of their arguments before submitting their essays. They could use the sheet to evaluate both the 1st drafts and the 2nd drafts, which could let them see the differences between the two by comparing the results. However, unlike all the other materials used in the study, this sheet was only suggested and it was an optional study material.

3.8. Reliability and Validity of the Teaching Guide

Prior to the pilot study, a Teaching Guide about the most common logical fallacies that students could commit was prepared by analyzing the writings of previous student groups belonging to the population from which the sample of the actual study was selected. While preparing this guide, the classifications of Engel (1982) and Ramage et al. (2010) regarding logical fallacies were taken as a basis, and the errors that were the most prevalent ones were brought together. As Hyland and Hyland (2006a) state, coded feedback encourages students to think and solve the problem emphasized by the teacher. Additionally, as Ferris (2002)

points out, indirect feedback is a more useful and convenient way of giving feedback for students' long-term writing development compared to direct feedback. Accordingly, a code has been determined for each type of error in accordance with indirect feedback and coded feedback.

Bearing in mind that it would be useful to give examples and explanations about these logical errors that the students may not be familiar with, these were also included in the teaching document. In the actual study, tips about how to avoid or correct these errors were also added to the Teaching Guide. The Teaching Guide drew the theoretical framework of the current study. At the beginning of this study, the pre-test writings of the students participating in the research were analyzed by the researcher to determine whether the error types determined in the previously prepared Teaching Guide were common or not. At the end of this process, two logical fallacies that did not exist in the teaching guide in the pilot study were added. The validity of the research was ensured since all the information in the Teaching Guide is related to the logical errors that are the focus of the study.

Before the data collection process began, the researcher trained a colleague on logical fallacies in terms of how to identify them in student writings to ensure inter-rater reliability. The researcher and the second evaluator read and analyzed several student papers together in order to have a common ground. Then, the researcher and the second evaluator read the remaining students essays separately. The researcher gave feedback to the first drafts of the student's essays with the coded feedback method and directed the students to the Teaching Guide so that they could notice and correct these errors. After the students made the necessary changes, their final drafts were read separately by the researcher and the second evaluator. The findings were compared and discussed to reach a final decision regarding the fallacious claims of the students. Consequently, the reliability of the research was ensured by having a second reader.

3.9. Reliability and Validity of the Interview Questions

Individual interview questions were prepared to seek answers for the third research question which was “*What are the perceptions of the students regarding the effect of teacher feedback on logical errors in their writing?*”. In addition, the aim of the research which was *to provide guidance on logical errors, which are part of the reasoning skills that keep the components of a text together in a logical framework* was taken into account while structuring the interview questions. The questions were prepared in accordance with a semi-structured

interview. The purpose of this is to ensure that the conversation proceeds in a flexible direction rather than a fixed one, as the course of the conversation can evolve in different directions due to its unpredictable nature. Expert opinion was also obtained for the interview questions to finalize them. Since all of the individual interview questions were related to the third research question, the purpose of the research and the experience of the students, the validity of the questions was ensured. The interviews were conducted in Turkish so that the students could express themselves better and feel more comfortable. The researcher translated all oral interviews into written form. Then, the researcher tried to reach the codes and themes by analyzing these written texts with the method of content analysis. The codes and themes were later tabulated. To ensure intra-rater reliability, the researcher looked at the individual interview data once again after 14 days with a fresh eye. The aim here was to prevent possible data loss by taking a closer look at the data after some time passed. In this way, the reliability of interview data was ensured.

3.10. Data Analysis

For quantitative data analysis, descriptive statistics related to the measurements obtained will be calculated. Whether the measurements have normal distribution will be examined. In the case of normal distribution assumption, t-test will be made for the differences between the two groups, and ANOVA will be made for cases where there are more than two groups. If the normal distribution assumption is not provided, the differences between the two groups will be examined with the Wilcoxon test, and the differences between more than two groups will be examined with the Kruskal Wallis test. Analysis will be carried out using the SPSS 25 program. For the analysis of qualitative data, content analysis will be utilized for identifying and grouping the logical fallacies that are found in the students' essays and for the interpretation of individual interviews. Table 14 illustrates a summary of the statistical tests applied.

Table 14

Summary of the Statistical Techniques Used to Analyze the Quantitative Data

Type of Data	The Test Applied for the Analysis
Comparison of the 1 st drafts and 2 nd drafts of writings tasks 1, 2, 3	Descriptive Statistics
Determining the effectiveness of the experimental process	Paired Samples T-Test
Determining the effectiveness of teacher corrective feedback	Repeated Measures ANOVA
Determining the source of differences in the measurements	Post Hoc Comparisons





CHAPTER IV

FINDINGS AND DISCUSSIONS

This chapter is devoted to explaining the findings of the study and the interpretations related to the findings. The results obtained for each research question are presented and discussed separately.

4.1. Quantitative Findings

Two of the research questions are based on the experimental part of the study. For the first two research questions, the qualitative data obtained from the student essays were quantified using quantitative methods. The argumentative essays written by the students were the data collection tools to find out the most common types of errors found in the students' writings in terms of logical fallacies, which was related to the first research question. To this end, the numbers and percentages of the errors found in each task were tabulated and calculated using MS Microsoft Excel. For the second research question, which sought to find out whether the number of logical fallacies in the student essays would decrease over tasks with teacher corrective feedback, various statistical tests were employed using SPSS-22.

4.1.1. Findings about the Frequencies of Logical Fallacies

4.1.1.1. Total Number of Logical Fallacies in Each Writing

In the data collection process, a total of 7 argumentative essays were analyzed in terms of logical fallacies. In order to quantify the errors found in each student's essay, a separate table was prepared on MS Microsoft Excel (see Appendix 19 for a sample) for every writing. When a logical fallacy was identified, it was recorded in the relevant column in the table. After this process was over, the number of logical fallacies found in each writing was

calculated and tabulated. The total number of errors identified in each writing is shown in Table 15.

Table 15

Total Number of Errors in Each Writing

	W1 (Pre-test / 1 st writing 1 st draft)	W2 (1 st writing 2 nd draft)	W3 (2 nd writing 1 st draft)	W4 (2 nd writing 2 nd draft)	W5 (3 rd writing 1 st draft)	W6 (3 rd writing 2 nd draft)	W7 (Post-test / 4 th writing)
Total Number of Errors	527	162	322	105	164	49	161

As it is clearly seen in the table, the students made the most mistakes in the 1st draft of the 1st writing task, which was utilized as the pre-test and applied prior to giving instruction on logical fallacies. Following the application of the pre-test, a 2-hour instruction was given on logical fallacies integrating several practice and production activities as well as introducing coded feedback and the Teaching Guide. Then, corrective coded feedback was given on the pre-tests of the students and they were asked to fix their logically fallacious claims depending on the feedback. As a result, the number of errors decreased to 162 from 527. In other words, 69% of the errors in the 1st draft were fixed after receiving feedback in the 1st writing task. Looking at this result, it can be claimed that teacher corrective feedback had a significant role in reducing the logically fallacious claims in the argumentative essays of the students.

In the table, it is apparent that the number of errors gradually decreased in the 1st drafts of the 2nd and 3rd writing tasks, which was also the case for the post-test. Yet, it is also clearly seen that when the students got feedback, the number of errors decreased further in their 2nd drafts. In the 2nd writing task, 67% of the errors and 70% of the fallacious claims were corrected in the 3rd writing task based on the feedback given. It can be concluded that the learners increasingly gained further awareness and experience about logical fallacies over the tasks, which was reflected in the improvement in their 1st drafts in writing tasks 2, 3, and 4. However, it is also possible to claim that they still needed teacher corrective feedback for further improvement and having less errors in their writings, which is apparent when the decrease in the number of errors in their 2nd drafts is considered.

4.1.1.2. The Number of Errors for Each Type of Logical Fallacies

Research Question 1: *What are the most frequent fallacies in students' essays?*

To answer the first research question formulated in the current study, the number of logical fallacies that were found in the students' essays were tabulated and calculated. Table 16 shows the number of logical fallacies for each separate type in 7 writings.

Table 16

The Number of Errors for Each Type of Logical Fallacies

Types of Fallacies	W1	W2	W3	W4	W5	W6	W7	Total
Hasty Generalization	176	53	99	23	39	11	36	437
Begging the Question	35	9	17	5	10	3	10	89
Oversimplification	88	27	17	4	18	4	20	178
False Analogy	6	2	1	0	2	1	1	13
Irrelevant Conclusion	68	28	114	48	32	14	35	339
Slippery Slope	13	3	5	2	2	1	4	30
Straw Man	3	1	2	1	1	0	1	9
False Dilemma	12	2	2	1	0	0	2	19
Appeal to Pity	8	1	6	1	1	0	1	18
False Cause	5	2	1	0	2	0	2	12
Red Herring	56	21	40	17	51	14	27	226
Bandwagon	2	0	0	0	1	0	1	4
Appeal to Authority	2	0	1	0	0	0	0	3
Ad Hominem	6	1	6	0	0	0	2	15
Argument by Emotive Language	25	5	1	0	3	0	4	38
Hypothesis contrary to Fact	22	7	10	3	2	1	15	60
Total	527	162	322	105	164	49	161	1490

As it is seen in the table, some types of logical fallacies were observed less frequently while some types of errors were more common in the writing tasks. It is clearly seen in the table that the most common logical fallacies were identified as *hasty generalization* (437), *irrelevant conclusion* (339), *red herring* (226), *oversimplification* (178), *begging the question* (89), and *hypothesis contrary to fact* (60). On the contrary, less errors were detected related to *argument by emotive language* (38) *slippery slope* (30), *false dilemma* (19), *appeal to pity* (18), *ad hominem* (15), *false analogy* (13), *false cause* (12), *straw man* (9), *bandwagon* (4), and *appeal to authority* (3).

It can be concluded by looking at the information given in the table that some of the fallacies were common before the treatment and continued to be the most common errors throughout the treatment while some others were less common at the beginning of the study and became

much less in number or were almost completely eliminated after teacher corrective feedback. This may imply that certain fallacies are more rarely committed and can be avoided with simple instruction or corrective feedback that is given once or twice. The obtained finding is in line with the results of Khoiri and Widiati (2017)'s study. Once the learners' awareness is raised, they may tend to commit such fallacies much less in their future writings. Yet, some other types of logical fallacies may not be that easily avoided in a short period of time and require more attention as well as experience on the side of the students. However, despite the fact that the students continued to have errors related to the most common types of logical fallacies over tasks, it is possible to claim that teacher corrective feedback was an effective intervention to decrease the number of errors in the 2nd drafts based on the results.

4.1.1.3. The Percentages of Errors for Each Type of Logical Fallacies

The percentages of logical fallacies were first tabulated and then calculated in percentages on MS Microsoft Excel to take a closer look at the most common types of errors in each writing task. Table 17 summarizes the percentages of errors committed in each writing.

Table 17

Percentages of Fallacies in Each Writing

Codes	Types of Fallacies	W1	W2	W3	W4	W5	W6	W7
F1	Hasty Generalization	33,4%	32,7%	30,7%	21,9%	23,8%	22,4%	22,4%
F2	Begging the Question	6,6%	5,6%	5,3%	4,8%	6,1%	6,1%	6,2%
F3	Oversimplification	16,7%	16,7%	5,3%	3,8%	11,0%	8,2%	12,4%
F4	False Analogy	1,1%	1,2%	0,3%	0,0%	1,2%	2,0%	0,6%
F5	Irrelevant Conclusion	12,9%	17,3%	35,4%	45,7%	19,5%	28,6%	21,7%
F6	Slippery Slope	2,5%	1,9%	1,6%	1,9%	1,2%	2,0%	2,5%
F7	Straw Man	0,6%	0,6%	0,6%	1,0%	0,6%	0,0%	0,6%
F8	False Dilemma	2,3%	1,2%	0,6%	1,0%	0,0%	0,0%	1,2%
F9	Appeal to Pity	1,5%	0,6%	1,9%	1,0%	0,6%	0,0%	0,6%
F10	False Cause	0,9%	1,2%	0,3%	0,0%	1,2%	0,0%	1,2%
F11	Red Herring	10,6%	13,0%	12,4%	16,2%	31,1%	28,6%	16,8%
F12	Bandwagon	0,4%	0,0%	0,0%	0,0%	0,6%	0,0%	0,6%
F13	Appeal to Authority	0,4%	0,0%	0,3%	0,0%	0,0%	0,0%	0,0%
F14	Ad Hominem	1,1%	0,6%	1,9%	0,0%	0,0%	0,0%	1,2%
F15	Argument by Emotive Language	4,7%	3,1%	0,3%	0,0%	1,8%	0,0%	2,5%
F16	Hypothesis contrary to Fact	4,2%	4,3%	3,1%	2,9%	1,2%	2,0%	9,3%

As the table clearly shows, both in the 1st drafts and 2nd drafts of the writing tasks, *hasty generalization*, *irrelevant conclusion*, *red herring*, *oversimplification*, *begging the question*, and *hypothesis contrary to fact* had the highest percentages of errors. Findings about the

most common types of logical fallacies were similar to the results of the studies conducted by Alagözlü (2007) and Indah and Kusuma (2015). Though the number of the aforementioned common logical fallacies significantly decreased after receiving feedback, they continued to be the most common types of errors in the 2nd drafts of the writing tasks. One possible reason could be that the learners might still feel that they need to sound assertive in order to convince the readers to support their arguments. One learner in the interview commented that he still found it hard to pay attention to avoiding hasty generalizations when he needed to speak very generally. This may show that learners might still have the urge to make *hasty generalizations* thinking that this could increase the credibility and strengths of their claims. As a solution, the learners' attention could further be drawn to the fact that using tentative language can make their arguments stronger rather than weakening them and increase the credibility of their claims.

As for *irrelevant conclusion* fallacy, the students may need to have more experience in terms of forming more sound connections between the premises and the conclusions in their arguments. One of the challenges students tend to have is that while writing their claims, they may have a gap in the chain of events that lead to a certain conclusion by expecting the reader to complete that gap through making inferences or drawing conclusions based on the given information. To fix this problem, learners could be encouraged to ask questions including Wh question words such as “*how?, why?, what's the result?*” to elicit the necessary steps in the chain of events that lead to the conclusion.

Students may commit *red herring* fallacy in their writings due to a variety of reasons. One possible explanation for the existence of red herring could be misunderstanding the writing prompt or the expectations required by the task. Another reason could be that the learners might not be aware that the focus of their argument is shifting towards a different direction or it could even look normal to them to write about a remotely related aspect of the main issue. A further explanation could be that the students may sometimes not possess adequate knowledge about the assigned topic or the argument they have mentioned, which may motivate them to at least mention some other ideas for the sake of writing something due to having concerns related to grading. So as to deal with red herring, a stronger focus could be placed on understanding the expectations and scope of writing prompts in writing classes as well as encouraging learners to brainstorm relevant ideas that fully respond to the given prompt before starting to write their texts.

Similar to hasty generalization, the reason for committing the fallacy of *oversimplification* could be trying to increase the strength of the claims by disregarding the other options, reasons, advantages, etc. In informal chats with the learners, some of them shared that they knowingly wanted the specific reason, result, advantage, etc. to stand out among others so that the reader could be convinced that it was more significant than the others. This may show that the learners may purposefully hide the other possibilities thinking that if they mentioned them, the reader would have less belief in what they were trying to support. At this point, it could be further emphasized that ignoring the other possibilities is not a valid way of convincing the reader and it may even disturb the readers who are aware of this invalid way of proposing arguments.

Another common error type identified in the current study was *begging the question*. One possible explanation for this fallacy could be that the learners may revolve around an argument due to a lack of knowledge about the topic or not having the necessary linguistic skills to propose the claims. In the essays of the participants in the current study, it was observed that most of the fallacies related to begging the question were detected in the introductory paragraphs or at the beginning of body paragraphs while trying to formulate the topic sentences. Additionally, when students lack the necessary grammar and vocabulary knowledge to write their claims, they may tend to restate what they have already written using different words. To address this type of fallacy, learners could be encouraged to brainstorm the grammar structures as well as vocabulary items, especially topic vocabulary, that are necessary to propose their claims in a more concise manner without begging the question. Moreover, they can be suggested to evaluate their arguments critically for avoiding this type of fallacy.

The fallacy of *hypothesis contrary to fact* was another common type of error identified in the students' essays. This fallacy resulted from making weak personal future predictions rather than basing their claims on sound evidence. The learners in the study might not have felt the responsibility of presenting valid evidence to talk about a possible consequence in the future since the future is unpredictable and unknown anyway. For raising the awareness of the learners about this type of error more, they could be encouraged to avoid proposing weak claims about the future, and basing their arguments on sound evidence and facts instead.

4.1.1.4. The Percentages of Logical Fallacies in the 1st Drafts

To take a closer look at the logical fallacies that were found in the 1st attempts of the 4 writing tasks, the percentages were tabulated and calculated separately. Figure 3 shows the percentages of logical fallacies found in the 1st draft of writing task 1 (pre-test).

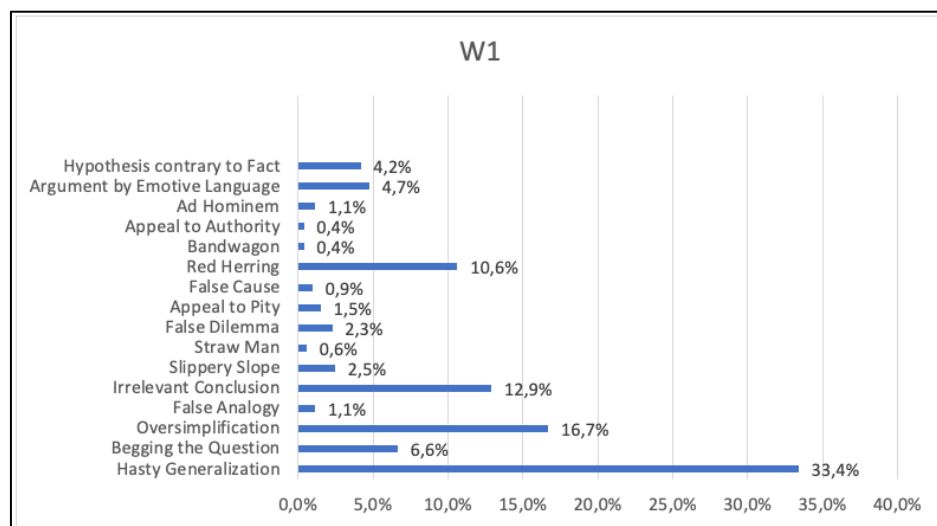


Figure 3. The percentages of logical fallacies in the 1st draft of writing task 1 (pre-test)

The findings of the pre-test are quite significant since they show the proficiencies of the students before the treatment. The figure clearly shows that hasty generalization was the most common type of logical fallacy in the 1st writing, namely the pre-test, with a percentage of 33,4%. The second most common error type was oversimplification with 16,7%, which was later followed by irrelevant conclusion (12,9%) and red herring (10,6%). However, some types of fallacies were found to be less common including begging the question (6,6%), argument by emotive language (4,7%), and hypothesis contrary to fact (4,2%). Some other types of fallacies were found to be rare such as straw man (0,6%) appeal to authority (0,4%), bandwagon (0,4%).

By looking at the findings, it is possible to infer that there are some common logical fallacies that almost all the students commit while proposing their arguments and some other types are much rarer and are committed by only few individual learners. It can be inferred that the learners in this study generally seemed to have the habit of trying to strengthen the credibility of their arguments by overgeneralizing or ignoring the other possibilities. Additionally, it seemed that they had issues about forming valid connections between the premises and the conclusions in their arguments without shifting the focus to another issue or aspect of the

topic discussed. Despite fixing some of the errors after receiving feedback, the learners continued to have these challenges in the 2nd writing task as it can be seen in Figure 4.

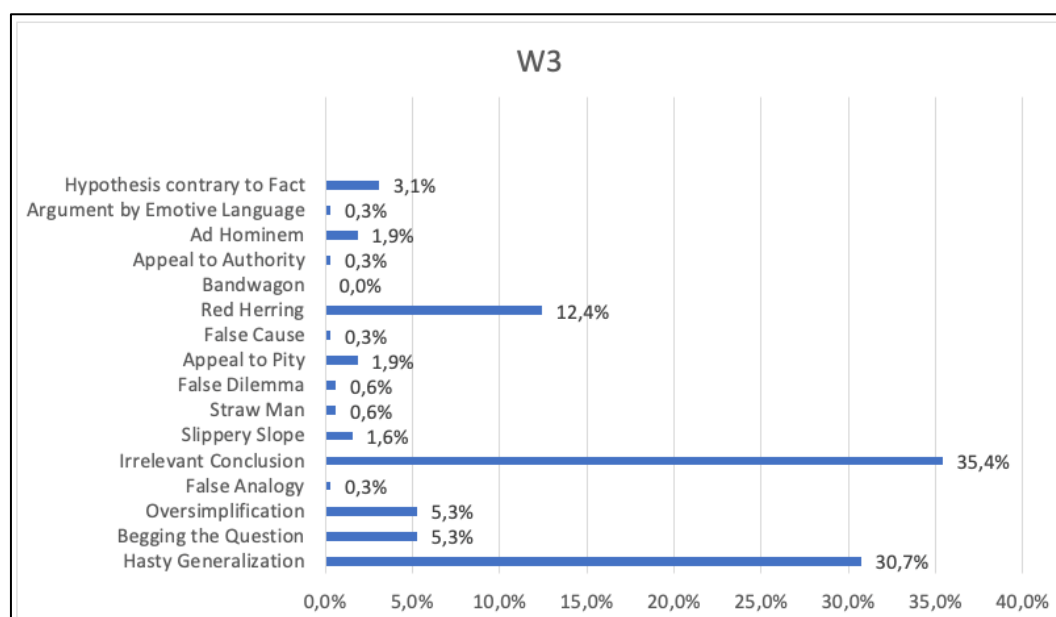


Figure 4. The percentages of logical fallacies in the 1st draft of writing task 2

In the figure, it is clear that irrelevant conclusion (35,4%), hasty generalization (30,7%), and red herring (12,4%) were the most common types of logical fallacies similar to writing task 1. It is also seen that oversimplification (5,3%), which was the second most common error type in writing task 1, was much less common in the 2nd writing task. While the other types of logical fallacies were mostly made by specific individuals, irrelevant conclusion, hasty generalization, and red herring continued to be committed by a majority of the students.

It can be concluded that after receiving feedback on logical fallacies in the 1st writing task, some of the errors were repeated in the 2nd writing task with a lower percentage while some others continued to have higher percentages. This could show that some types of logical fallacies could be fixed more easily in the short term while more time and experience may be needed for certain other types, especially hasty generalization, irrelevant conclusion, and red herring. An interesting finding was that irrelevant conclusion fallacy was more common than hasty generalization in the 2nd writing task. The reason could be that students might have gained awareness of how to avoid the simple hasty generalizations such as not using *every* or *all* in their claims, which may have decreased the number of errors in return. Yet, it is possible to claim that more time and experience may be needed for the improvement in the not so obvious hasty generalizations, irrelevant conclusion and red herring fallacies

considering that they cannot usually be fixed by working on a single word in a sentence but rather require bigger changes or more skills as a writer. Similar to writing task 1 and 2, hasty generalization, irrelevant conclusion, and red herring were the most common types of logical fallacies in writing task 3 as Figure 5 shows:

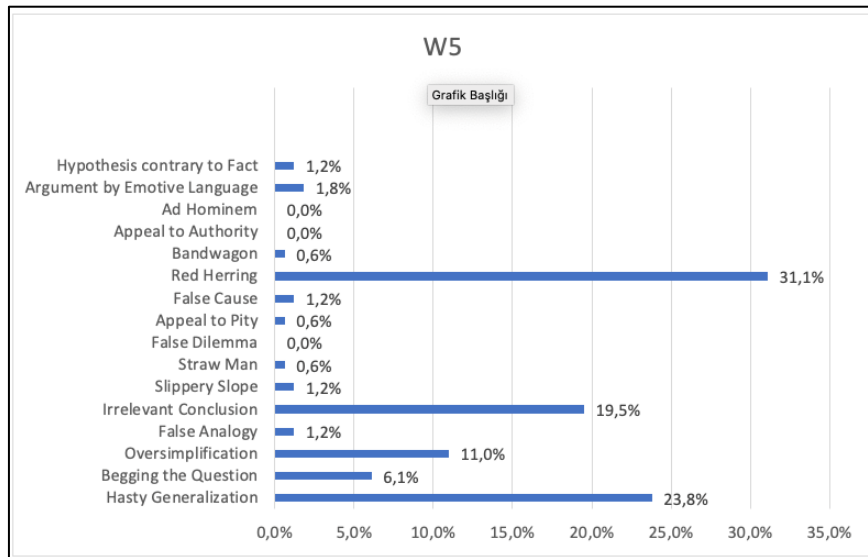


Figure 5. The percentages of logical fallacies in the 1st draft of writing task 3

In the 3rd writing task, the most common error type was red herring with 31,1%. It was followed by hasty generalization with 23,8% and irrelevant conclusion 19,5%. The fallacy of oversimplification was also identified as a common type with 11,0%. An interesting finding was that some types of errors such as ad hominem, appeal to authority, and false dilemma were not observed in this task at all. Some other types were also found to be very rare such as hypothesis contrary to fact (1,2%) and argument by emotive language (1,8%) compared to the previous writing tasks. It is possible to conclude by looking at the overall results that some error types were eliminated to a great extent and an improvement was observed in the most common error types.

By looking at the results related to the 3rd writing task, it is possible to infer that some types of logical fallacies could be minimized or eliminated to a great extent by raising awareness and giving corrective feedback. It also seems that the types of logical fallacies that were already not very common in the pre-test continued to be less rare in all the writing tasks. This may imply that such fallacies may not fully reflect the thinking style of the students, which may be the reason why they are eliminated more quickly. Therefore, while teaching and practicing logical fallacies, more focus could be placed on the common and repeating

types compared to the much rarer ones. At the end of the treatment process, the 4th writing task, namely the post-test, was applied. The percentages of the errors found in this task are summarized in Figure 6.

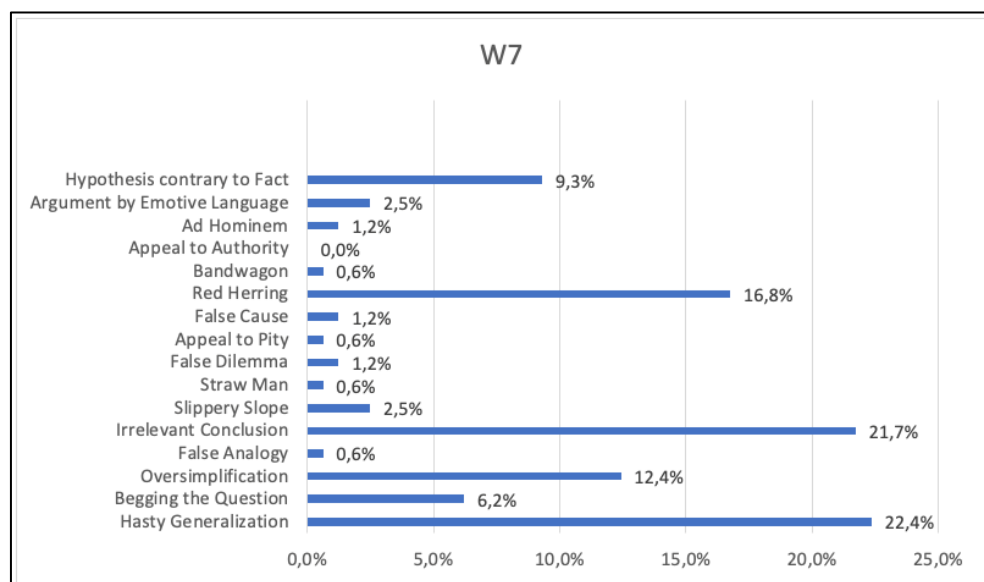


Figure 6. The percentages of logical fallacies in writing task 4 (post-test)

The 4th writing task was utilized as the post-test in the current study. In the figure, it is seen that just like the previous writings, hasty generalization (22,4%), irrelevant conclusion (21,7%), red herring (16,8%), and oversimplification (12,4%) were the most common types of logical fallacies in the students' essays. The percentage of errors related to begging the question was 6,2%, which was similar to the percentages in the previous writings. The remaining types of logical fallacies such as false cause (1,2%), ad hominem (1,2%), or straw man (0,6%) were much lower in percentage compared to the aforementioned common types.

It could be valid to mention at this point that the types or frequencies of the logical fallacies may also be related to the writing prompt. For instance, if the writing prompt is about the future, it would be probable that the students could have more fallacies resulting from hypothesis contrary to fact. Similarly, if the students are not very familiar with the main topic of the assigned writing task, more errors related to irrelevant conclusion or red herring could be expected. Therefore, it could be inferred that topic familiarity may also have a role in eliminating certain types of logical fallacies further in the long run. Considering these factors, it could be possible to observe that while one type of fallacy is the most common one in one writing task, a different type of error could stand out to be the most common in another task, which was the case in this study. One implication could be that writing teachers

may try to anticipate the possible logical fallacies that could be committed commonly due to the writing prompt or the topic and put more emphasis on highlighting them even before the students write their texts and have those errors.

4.1.2. Findings about the Reduction of Logical Fallacies

4.1.2.1. Analysis of the Statistical Tests

Research Question 2: *Does teacher written corrective feedback contribute to reducing logical fallacies in students' essays?*

Within the scope of the current study, four different tasks to measure a similar purpose were developed to be applied to 43 students in total. The first 3 tasks were applied twice at different times. The very first writing was utilized as the pre-test. After the first application of each task, the errors related to logical fallacies were highlighted through teacher corrective feedback and the same task was applied again to check if the students could fix the errors. In this way, the decrease in the number of fallacy-related errors was analyzed with the second application of each task. The last task developed within the scope of the study was implemented only once and it was utilized as the post-test.

In the current study, there were seven different repeated measurements for each student in total. The distributions of these seven separate measurements were examined in order to select the appropriate method while analyzing the data. Accordingly, it was seen that the Skewness and Kurtosis values obtained for each measurement generally ranged from -2 to +2. The fact that these values are between -2 and +2 is generally interpreted as the distribution is normal (Hair et al., 2010). Accordingly, parametric methods were used in the analyses made within the scope of the research since the assumption of the normality of the distributions was provided.

Initially, two different measurements made for the first three tasks were compared with the Paired Samples T-Test in order to determine the effectiveness of the experimental process. The result obtained at this stage shows the decrease in students' errors for each task applied. Additionally, the measurements of the first application for each task were compared with the Repeated Measures ANOVA method in order to determine the effectiveness of the feedback given, in other words, the experimental process. In this way, a total of four measurements were compared. Bonferroni Post Hoc test was used to determine from which measurement

the obtained difference was caused. Analyzes were made using SPSS-22 and .05 significance level was taken into consideration in the interpretation of the results obtained from the statistical tests used in the study. Descriptive statistics of 1st draft and 2nd draft measurements made for the three tasks are given in Table 18.

Table 18

Descriptive Statistics

Task	Draft	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>S. D.</i>
Task 1	First draft	43	3	25	12.26	4.74
	Second draft	43	1	10	3.77	1.88
Task 2	First draft	43	0	17	7.49	4.07
	Second draft	43	0	9	2.44	1.96
Task 3	First draft	43	0	11	3.81	2.78
	Second draft	43	0	5	1.14	1.37

As seen in the table, while the average error of students in the 1st draft for Task 1 was 12.26, the average error number in 2nd draft decreased to 3.77. Similarly, while the average error number of students in the 1st draft for Task 2 was 7.49, it dropped to 2.44 in the 2nd draft. In Task 3, the average error number, which was 3.81 in the 1st draft, decreased to 1.37 after teacher feedback. From these results, it may be concluded that giving teacher corrective feedback had a significant role in decreasing the number of logical fallacies in the argumentative essays of the learners. It is possible to claim by looking at the findings that teacher corrective feedback was influential in contributing to having less errors in the 1st drafts of the writing tasks over time in addition to assisting learners to fix their fallacious claims and having more sound ones in the 2nd drafts of the writing tasks. As the findings make it evident, the research question about the reduction of logical fallacies through teacher corrective feedback has an answer and it has a positive influence on decreasing the number of logically fallacious claims in the argumentative essays of the learners in the study. The findings can also be seen in Figure 7.

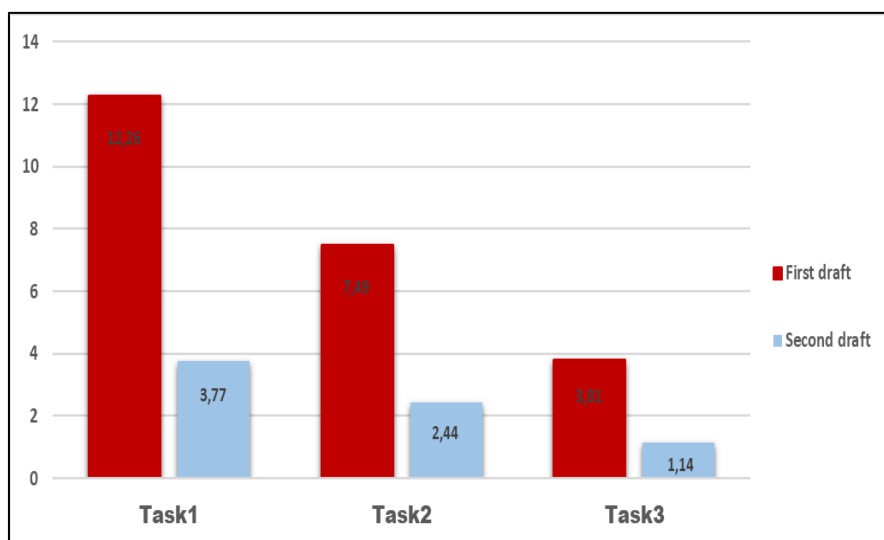


Figure 7. The mean scores of the number of logical fallacies

As can be seen in Figure 7, as a result of the feedback given after the first applications for each task, the number of errors has decreased considerably. It can be inferred from the figure that a decrease in the number of errors was also observed for the 1st drafts of the writing tasks. Yet, the decrease in the number of the errors in the 2nd drafts of the writing tasks is higher. This may suggest that the learners have gained awareness about logical fallacies, which was reflected in the decrease in the number of errors in their 1st drafts of the tasks. However, it can be concluded by looking at the figure that the learners needed teacher feedback to produce more quality arguments with less logical fallacies. The findings of the comparison of the 1st draft and 2nd draft measurements made separately for each of the three tasks in the study are given in Table 19.

Table 19

Paired Samples T-Test

Task	First draft - Second draft	<i>t</i>	<i>df</i>	<i>p</i>
Task 1	8.49	14.69	42	.000*
Task 2	5.05	10.83	42	.000*
Task 3	2.67	8.39	42	.000*

* $p < .05$

As seen in the table, in the applications for Task 1 ($t = 14.69$; $p < .05$), Task 2 ($t = 10.83$; $p < .05$) and Task 3 ($t = 8.39$; $p < .05$), a statistically significant difference was found between pre-feedback and post feedback measurements. The findings show that the number of errors

found in the student essays decreased after receiving feedback, which was a similar result in all three tasks. The findings have a proof that teacher corrective feedback had a role in reducing the fallacious claims of the learners by highlighting their errors and guiding them towards what they needed to do to propose more valid arguments.

In this study, the treatment was conducted with four tasks developed to measure the same purpose. After the first three measurements, corrective feedback was given for the errors made by the students in the relevant task applied and then the next task was applied. In the comparison made here, only the first drafts of the first three tasks and the last task (task 4) are considered. In this way, the measurements obtained at different times were compared. The findings obtained are given in Table 20.

Table 20

Repeated Measures ANOVA

Source of Variance	Sum of Squares	df	Mean Square	F	p
Time ¹	2085.14	3	695.05	60.45	.000*
Residual	1448.86	126	11.50		

*p<.05

1-Time: Task 1, 2, 3 and 4 (First draft)

As seen in Table 20, a statistically significant difference was obtained between the first measurements made for four different tasks ($F(3,126) = 60.45$; $p < .05$). The findings show that there is a difference in the average number of errors made by the students in the tasks. In order to determine the source of the difference, Bonferroni Post Hoc test was performed between measurements made at different times. The findings obtained are given in Table 21.

Table 21

Post Hoc Comparisons

		Mean Difference	SE	t	p
Task 1	Task 2	4.77	0.92	5.17	.000*
	Task 3	8.44	0.79	10.65	.000*
	Task 4	8.51	0.75	11.33	.000*
Task 2	Task 3	3.67	0.73	5.04	.000*
	Task 4	3.74	0.62	6.01	.000*
Task 3	Task 4	0.07	0.50	0.14	1.00

*p<.05

The number of errors made by the students is mostly in the first measurement made for task 1 ($\bar{x} = 12.26$). As seen in Table 21, the number of errors made in task 1 is statistically higher than the number of errors made in task 2 ($\bar{x} = 7.49$), Task 3 ($\bar{x} = 3.81$) and task 4 ($\bar{x} = 3.74$) ($p < .05$). Similarly, the number of errors made in task 2 is higher than the number of errors made in task 3 and task 4 ($p < .05$). However, there is no statistically significant difference between the number of errors obtained in the applications for task 3 and task 4 ($p > .05$). The findings show that the feedback given in order to reduce the number of errors made by the students is effective. After each feedback, the number of errors students made decreased. It is also seen that in task 3 ($\bar{x} = 3.81$) and Task 4 ($\bar{x} = 3.74$), the number of errors made by students is low and similar. This was indeed an interesting result. The table clearly shows that when the learners wrote two essays and got feedback twice, their performance in the 1st drafts of the 3rd and 4th writing tasks were very similar in terms of logical fallacies. This can imply that though logical fallacies were not completely eliminated, the number of errors was lower in the 3rd and 4th writing tasks compared to the 1st drafts of the 1st and 2nd writing tasks. It is possible to infer that though logical fallacies may not completely be eliminated from students' essays, their number could get lower and students may make fewer errors after two writing cycles. Therefore, it can be claimed by looking at this specific finding of the current study that having learners write more essays to completely eliminate logical fallacies may not reveal the intended result.

4.1.2.2. Comparisons of the 1st and 2nd drafts

To take a closer look at the improvement between the 1st and 2nd drafts of the writing tasks, the number of errors corrected after receiving teacher corrective feedback as well as their percentages were tabulated and calculated. Table 22 illustrates the comparisons of the 1st and 2nd drafts in terms of the correction of logical fallacies.

Table 22

Comparisons of the 1st and 2nd Drafts in terms of the Correction of Logical Fallacies

Codes	W1 The number of errors	W2 The number of errors	The number of errors corrected (WT1)	The percentage of errors corrected (WT1)	W3 The number of errors	W4 The number of errors	The number of errors corrected (WT2)	The percentage of errors corrected (WT2)	W5 The number of errors	W6 The number of errors	The number of errors corrected (WT3)	The percentage of errors corrected (WT3)
F1	176	53	123	70%	99	23	76	77%	39	11	28	72%
F2	35	9	26	74%	17	5	12	71%	10	3	7	70%
F3	88	27	61	69%	17	4	13	76%	18	4	14	78%
F4	6	2	4	67%	1	0	1	100%	2	1	1	50%
F5	68	28	40	59%	114	48	66	58%	32	14	18	56%
F6	13	3	10	77%	5	2	3	60%	2	1	1	50%
F7	3	1	2	67%	2	1	1	50%	1	0	1	100%
F8	12	2	10	83%	2	1	1	50%	0	0	0	0%
F9	8	1	7	88%	6	1	5	83%	1	0	1	100%
F10	5	2	3	60%	1	0	1	100%	2	0	2	100%
F11	56	21	35	63%	40	17	23	58%	51	14	37	73%
F12	2	0	2	100%	0	0	0	0%	1	0	1	100%
F13	2	0	2	100%	1	0	1	100%	0	0	0	0%
F14	6	1	5	83%	6	0	6	100%	0	0	0	0%
F15	25	5	20	80%	1	0	1	100%	3	0	3	100%
F16	22	7	15	68%	10	3	7	70%	2	1	1	50%
Total	527	162	365	69%	322	105	217	67%	164	49	115	70%

After receiving feedback on the 1st draft of the 1st writing task, 69% of the errors were corrected in total. A significant decrease was observed in the frequency of the errors as a result of teacher corrective feedback. 70% of the errors resulting from hasty generalization, which was the most common error type in the 1st task, were fixed. The percentage of the correction of errors related to the second most common error oversimplification was found as 69%. Additionally, 63% of the errors of red herring and 59% of the irrelevant conclusion fallacies were corrected by the learners based on teacher corrective feedback. Furthermore, some of the rare errors were almost completely eliminated such as bandwagon (100%), appeal to authority (100%), ad hominem (83%), appeal to pity (88%), straw man (67%), false analogy (67%), slippery slope (77%), false dilemma (83%).

In the 2nd writing task, 67% of the total errors were fixed in the 2nd drafts after receiving teacher corrective feedback. The most common error type identified was irrelevant conclusion and a total of 58% of the errors were corrected. 76% of the errors resulting from hasty generalization were fixed, which is more than the percentage in the 1st writing task. The errors related to red herring were fixed with a percentage of 58% in the 2nd drafts. Some of the rare errors found in the 1st drafts were completely eliminated after feedback including

false analogy, false cause, appeal to authority, ad hominem, and argument by emotive language. The percentages of correction for some other rare types of errors were high such as hypothesis contrary to fact (67%), begging the question (71%), and oversimplification (76%).

In the treatment process, the 1st draft of the 3rd writing task was the last writing for which corrective feedback was given. In the 2nd draft, the percentage of correction of the logical fallacies was 70%, which was the highest percentage of correction among the 3 tasks. In this task, 72% of the hasty generalization and 73% of the red herring fallacies were fixed while the percentage was lower for another common error type, namely irrelevant conclusion (56%). The percentages of correction for the two error types, begging the question (70%) and oversimplification (78%), were high in the 2nd drafts. Some types of fallacies were not observed in the 1st drafts including false dilemma, appeal to authority, and argument by emotive language in the later tasks. Furthermore, the rare errors related to straw man, appeal to pity, false cause, bandwagon, and argument by emotive language were completely eliminated in the 2nd drafts after teacher corrective feedback.

By looking at the results presented in the table, it can be claimed that teacher corrective feedback had a role in the correction of logical fallacies in students' claims. In all three writing tasks, a considerable amount of improvement was observed in the 2nd drafts in terms of logical fallacies. It is also clear that some less frequent types of fallacies such as *false cause* and *hypothesis contrary to fact* tend to be made even less over tasks. Some of the fallacies were even completely eliminated in either 1st drafts or 2nd drafts such as *ad hominem*, *straw man*, and *false dilemma*. Yet, when it comes to the most common logical fallacies that were *hasty generalization*, *irrelevant conclusion*, and *red herring*, it is seen that though a significant improvement is observed in terms of correcting them once they are highlighted by the teacher, these logical fallacies continue to be observed in the essays. It can be concluded that less frequent fallacies may require less time and feedback to be fixed, yet closer attention may be needed for the improvement of more frequent fallacies. To this end, more time could be allocated to focus on them and writing teachers could deal with them more closely from time to time in writing classes throughout the course rather than giving instruction on them only once. Additionally, more awareness and experience may be needed on the side of the learners. They could be encouraged more to pay attention to evaluating their arguments to avoid those fallacies in the first place.

4.1.2.3. Analysis of the Error Correction Attempts

After the number of errors was calculated for each type of fallacy found in both the 1st and 2nd drafts of the writing tasks, they were evaluated to better understand the corrections. Three categories as *correction*, *false-repairs*, and *no correction* were determined to classify the attempt of the learners in the 2nd drafts of the tasks. Each fallacious claim in the 1st draft was compared to its equivalent in the 2nd draft. If the error was correctly fixed, it was categorized as a *correction*. If there was an attempt to correct the error but was fixed incorrectly, it was classified as a *false-repair*. Finally, when the student did not make any changes and kept the claim as it was in the 1st draft, it was put in the category of *no correction*. In the analysis process, MS Word Excel was utilized for tabulation and calculation purposes. Table 23 illustrates the details of correction of errors in writing task 1.

Table 23

Details of the Correction of Errors in Writing Task 1

Type of fallacy	Total number of errors in the 1 st draft	Correction	False-repairs	No correction	Total number of errors in the 2 nd draft
Hasty Generalization	176	123	39	14	53
Begging the Question	35	26	6	3	9
Oversimplification	88	61	19	8	27
False Analogy	6	4	1	1	2
Irrelevant Conclusion	68	40	19	9	28
Slippery Slope	13	10	2	1	3
Straw Man	3	2	1	0	1
False Dilemma	12	10	2	0	2
Appeal to Pity	8	7	1	0	1
False Cause	5	3	1	1	2
Red Herring	56	35	13	8	21
Bandwagon	2	2	0	0	0
Appeal to Authority	2	2	0	0	0
Ad Hominem	6	5	1	0	1
Argument by Emotive Language	25	20	3	2	5
Hypothesis contrary to Fact	22	15	5	2	7
TOTAL	527	365	113	49	162

According to the table, there was a total of 527 fallacious claims in the 1st drafts of the essays. After receiving feedback, 365 of the errors were corrected in the 2nd drafts. The learners also attempted to fix 113 of the identified 527 errors, but they were not successful at correcting them accurately. 49 the claims were untouched by the learners. Namely, despite being

highlighted as fallacious claims, the learners did not make any changes to the claims and kept them as they were in the 1st draft. When the most common error type that is hasty generalization is considered, 123 of the errors were correctly fixed while 39 attempts proved to be unsuccessful. For 14 of the errors, the students did not make any changes. For another common type of fallacy which is oversimplification, 61 attempts were successful, 19 errors were inaccurately fixed and eight of the fallacious claims were exactly the same as how they were in the 1st draft. It is also seen that there were some unsuccessful attempts for the less common fallacies in this task such as false dilemma (2), slippery slope (2), and hypothesis contrary to fact (5).

By looking at the information given in the table, it could be inferred that teacher corrective feedback was effective in guiding learners to correct most of the fallacious claims in their 2nd drafts. Additionally, it is possible to state that the learners had awareness about how to fix most of the errors, which allowed them to accurately correct most of them. Yet, it is also obvious that the learners needed further experience to fix some of the errors since their corrections were made incorrectly. One reason could be that since this was the 1st task and they received feedback on the logical fallacies in their essays for the first time, they might have failed to correct some of them due to having little experience about correcting fallacious claims. As for the errors that were left untouched by the learners, there might be two explanations. Initially, the learners may have been unsure about how to fix the errors due to having little experience similar to why they may have had false-repairs. Additionally, the learners might have thought that the highlighted claims were not fallacious to their understanding. As a result, they might have decided to keep the claims as they were after evaluating them as fallacious or not. Such a conclusion could be reached since the learners made changes to their other fallacious claims, which shows that they worked on all of them and decided not to change only few of them. Depending on the results of Writing Task 1, it can be claimed that more time and experience may be needed to correct more numbers of fallacious claims, especially the ones resulting from *hasty generalization*, *oversimplification*, *irrelevant conclusion*, and *red herring*. To have a deeper understanding of whether more errors could be fixed after a feedback cycle was completed, the corrections in the 2nd writing task were analyzed in the same way and the results are shown in Table 24.

Table 24

Details of the Correction of Errors in Writing Task 2

Type of fallacy	Total number of errors in the 1 st draft	Correction	False-repairs	No correction	Total number of errors in the 2 nd draft
Hasty Generalization	99	76	18	5	23
Begging the Question	17	12	3	2	5
Oversimplification	17	13	2	2	4
False Analogy	1	1	0	0	0
Irrelevant Conclusion	114	66	30	18	48
Slippery Slope	5	3	1	1	2
Straw Man	2	1	1	0	1
False Dilemma	2	1	0	1	1
Appeal to Pity	6	5	0	1	1
False Cause	1	1	0	0	0
Red Herring	40	23	11	6	17
Bandwagon	0	0	0	0	0
Appeal to Authority	1	1	0	0	0
Ad Hominem	6	6	0	0	0
Argument by Emotive Language	1	1	0	0	0
Hypothesis contrary to Fact	10	7	2	1	3
TOTAL	322	217	68	37	105

In the 2nd writing task, there was a total of 322 fallacious claims in the 1st drafts of the essays. 217 of these errors were fixed correctly while there were 68 false-repairs and 37 no corrections. The most common error type was identified as irrelevant conclusion and 66 out of 114 claims which had irrelevant conclusion fallacy were corrected. For this type of logical fallacy, 30 false-repairs and 18 no corrections were recorded. Regarding the second most common type of logical fallacy with a total of 99 errors, namely hasty generalization, 76 attempts were successful, there were 18 false-repairs, and five of the errors were not corrected at all. Concerning the fallacy of red herring, the third most common type of fallacy in the 2nd writing task, 23 out of 40 fallacious claims were successfully corrected. 11 attempts to fix errors resulting from red herring were unsuccessful and six of the erroneous claims were untouched. It is also seen in the table that for the logical fallacies that were less common, the number of false-repairs and no corrections were lower compared to the more common errors.

It can be inferred by looking at the findings in the table that some errors including *bandwagon*, *appeal to authority*, *argument by emotive language*, *ad hominem*, and *false analogy* could be easier for the learners to fix and therefore they could even be completely

eliminated in the 2nd draft. It is possible to claim that such errors were more successfully fixed compared to especially hasty generalization, irrelevant conclusion, and red herring fallacies, which was a similar finding to that of the 1st writing task. This result may indicate that some types of fallacies could be easier and more concrete for the learners to fix in a shorter time while some other types of fallacies may require more time and experience for the learners to fix them more skillfully. To this end, the 3rd writing task was analyzed in the same way and the details are illustrated in Table 25.

Table 25

Details of the Correction of Errors in Writing Task 3

Type of fallacy	Total number of errors in the 1 st draft	Correction	False-repairs	No correction	Total number of errors in the 2 nd draft
Hasty Generalization	39	28	4	7	11
Begging the Question	10	7	2	1	3
Oversimplification	18	14	1	3	4
False Analogy	2	1	0	1	1
Irrelevant Conclusion	32	18	11	3	14
Slippery Slope	2	1	1	0	1
Straw Man	1	1	0	0	0
False Dilemma	0	0	0	0	0
Appeal to Pity	1	1	0	0	0
False Cause	2	2	0	0	0
Red Herring	51	37	8	6	14
Bandwagon	1	1	0	0	0
Appeal to Authority	0	0	0	0	0
Ad Hominem	0	0	0	0	0
Argument by Emotive Language	3	3	0	0	0
Hypothesis contrary to Fact	2	1	1	0	1
TOTAL	164	115	28	21	49

In the final task written in the feedback cycle, 164 fallacious claims were identified in the 1st draft. Of all the fallacious claims, 115 were fixed correctly while the number of false-repairs was 28 and for 21 of the errors no corrections were made by the learners in the 2nd draft. In the 3rd writing task, the most common type of logical fallacy was red herring. Out of 51 errors, 37 were fixed correctly, eight were falsely repaired and 6 were not corrected at all. The second most common logical fallacy was hasty generalization with 39 errors. 28 attempts were successful while only four attempts were unsuccessful and seven erroneous claims were left untouched. Concerning the third most common fallacy that is irrelevant conclusion, 18 fallacious claims were fixed accurately, 11 attempts were recorded to be

unsuccessful and only three of the errors were kept the same without making any changes. It is seen in the table that almost all the less common logical fallacies including *bandwagon*, *appeal to authority*, *ad hominem*, *argument by emotive language*, *straw man*, *false dilemma*, *appeal to authority*, and *false cause* were fixed correctly in the 2nd draft.

By looking at the results obtained from the 3rd writing task, it can be concluded that the learners gradually got better at correcting their fallacious claims over time. The findings reveal that in addition to the decrease in the number of their erroneous claims in the 1st draft, the learners were also more successful at correcting the fallacious claims in the 3rd writing task. This can suggest that having two feedback cycles contributed to correcting the fallacies highlighted with corrective feedback more skillfully gradually and even eliminating some types of logical fallacies in the essays. An overall conclusion that can be reached is that as learners have more experience about logical fallacies, they can gain the habit of avoiding them in the first place and correcting their fallacious claims once they are highlighted with corrective feedback over time. Therefore, it could be effective to place a specific and explicit focus on teaching, practicing, and avoiding logical fallacies in writing classes, which can contribute to reducing fallacious claims of learners and helping them produce more sound and valid arguments.

4.2. Qualitative Findings

Research Question 3: *What are the students' perceptions about the effect of teacher written corrective feedback they received on the logical fallacies in their essays?*

The qualitative findings of the current study were obtained from the semi-structured individual interviews held once the treatment process was over. Initially, the participants' transcribed responses to the interview questions were analyzed to determine the codes for each question. Following the coding process, the related codes were classified under categories. Ultimately, thematic categories were determined based on the categories that emerged depending on the codes (Appendix 24). Two general categories as positive and negative attitudes appeared to classify the thematic categories. For only one category, neutral perceptions were shared by few participants and they were classified as neutral attitudes. Ultimately, the frequency of the thematic categories as well as sample key terms to exemplify interviewee responses were determined. Table 26 illustrates the categories, thematic categories, frequencies, and sample key terms obtained from the individual interviews.

Table 26

The Perceptions of Learners of the Treatment on Logical Fallacies

Category	Thematic category	Frequency	Sample key terms
Positive attitudes towards the treatment on logical fallacies	Usefulness	11	No familiarity with fallacies before Learning what kind of sentences lead to logical fallacies in essays
	Gaining awareness	13	Noticing and self-correcting logical fallacies Writing more carefully Checking essays especially for fallacies
	Improving the quality of writing	13	Writing in a more academic manner Less logical fallacies over time Using more tentative language
	Noticing and identifying fallacies through guidance	10	One thinks his writing is flawless Difficult to see logical fallacies
	Improving critical thinking skills	13	Affected my way of thinking Questioning the quality of arguments
	Benefits in other areas	11	Gaining confidence as a writer Paying attention to fallacies in daily life Keeping them in mind while speaking Noticing logical fallacies in sources
Negative attitudes towards the treatment on logical fallacies	Uselessness	2	No need to focus on fallacies specifically Just made the changes because I had to Could be learnt by checking individually without spending a special effort Too much focus
	Restrictiveness	2	Limiting me while writing Feeling isolated as the writer
	Disturbing the unity	2	Disharmonizing the essay
	Complicating the process	2	Making the process harder and longer
Beliefs about the process writing approach	Benefits	13	Providing room for improvement Contributions of teacher feedback
	Drawbacks	4	Over-dependence on feedback Not putting enough effort for the 1 st draft
Beliefs about the coded feedback	Effective	11	Clear feedback increases motivation Practical Understanding the specific mistake easily Memorable like math formulas Like a small capsule
	Ineffective	3	Preferring feedback in the margins Only checked the mistakes underlined

4.2.1. Positive Attitudes towards the Treatment on Logical Fallacies

The most common category of the interview data regarding the process, namely placing an explicit focus on the teaching and elimination of logical fallacies, was positive attitudes towards the treatment. The category includes usefulness, gaining awareness, improving the quality of writing, noticing and identifying fallacies through guidance, improving critical thinking skills, benefits in other areas as the thematic categories. Each category has different

explanations and implications that are formulated as a result of the analysis of the learners' responses regarding their perceptions.

4.2.1.1. Usefulness

11 out of 13 learners reflected that having an explicit focus on logical fallacies and attempting to eliminate them in their essays was useful. Some of them stated that they were unfamiliar with the fallacies prior to the treatment and at the end of the process they learnt what logical fallacies were and what kind of sentences led to proposing fallacious claims in their essays. To illustrate, Tony referred to this benefit by saying "I didn't know much about logical fallacies. We learnt what they are and by writing what kind of sentences we commit logical fallacies". It can clearly be inferred that the learners needed to be informed about the fallacies explicitly since the topic was quite unfamiliar to them.

Several learners underlined another benefit of the treatment in terms of showing that logical fallacies were unacceptable similar to their native language and having such a focus helped them write their essays in a more logical way in English. To elaborate on this issue, Tommy stated that "While speaking or writing in another language, we sometimes lose our logic. For example, we were saying that something was important but offered a nonsense reason. We felt it was normal to do it in another language than our own. Yet, since it was our focus in the lesson, I started to sense that something I wrote was nonsense or illogical". One reason could be that learners tend to focus only on using the language without questioning the quality of their content and L2 writing may be considered as a way of using the language rather than as a means of communication for expressing ideas to the audience by some Turkish learners in high school or early at university.

Additionally, when Turkish education is considered, there is almost no focus on logical fallacies and the closest subject matter is *errors of expression*. Though *errors of expression*, which may result from fallacious thinking in some cases rather than all, and logical fallacies have certain similarities, they seem to have more differences since errors of expression are also related to the unnecessary or wrong use of words in most cases. Additionally, *errors of expression* are usually covered for exam purposes rather than developing the content in students' compositions. Therefore, learners' knowledge is usually at the recognition level and this may make it harder for them to identify their arguments as illogical by benefitting from what they know about *errors of expression* in Turkish. Furthermore, not having an explicit focus on logical fallacies in their previous English learning experiences may have

prevented them from developing an approach that could enable them to regard proposing fallacious claims as unacceptable in English language.

4.2.1.2. Gaining Awareness

All the learners who participated in the interview stated that they gained awareness about logical fallacies thanks to the treatment. This awareness was reflected in many different ways such as writing in a more careful manner by “keeping logical fallacies in mind, noticing and self-correcting logical fallacies even before putting them in writing by filtering their thoughts, checking their drafts especially for logical fallacies, starting to notice fallacies in someone else’s writing, having the tendency to stop and read the sentences in terms of fallacies while writing”, etc. July stated that “I’m trying to make sentences by filtering my thoughts rather than writing in the way I initially think. I liked logical fallacies because I believe I break people’s heart less and become a more thoughtful person”. Obviously, July realized that having fallacy free arguments would help sound more tentative and cautious. Several other learners underlined other aspects including learning to base arguments on proof rather than personal views and emotions, noticing how good writers propose their claims as free of fallacies, and noticing the adverse effect of logical fallacies on content integrity and fluency in writing, etc. Some learner responses are exemplified below:

S1: I learnt to base my arguments on evidence rather than personal beliefs or emotions and realized how even one sentence could affect my writing.

S5: Even without needing the teaching guide, I check my essay to see if there are logical fallacies and try to fix them after seeing my mistakes.

S10: I sometimes fixed some parts even if you didn’t give feedback. I was thinking that maybe you tolerated the mistake, did not notice it, or it was a trivial error. I wasn’t working only on the parts highlighted with the feedback. I was reading my essay from the beginning to the end and changing some parts if I thought there could be a fallacy even if there was no feedback about them.

S13: I was working closely with one of my friends from the class and we were giving feedback to each other in terms of fallacies before we submitted our first drafts. I also helped a friend from another class by talking about fallacies since they did not focus on them in the lesson.

Such statements make it obvious that addressing logical fallacies by placing an explicit focus on them raised students' awareness in many respects. In addition to gaining awareness about their own mistakes, students could also identify fallacious claims in their peers' essays.

4.2.1.3. Improving the Quality of Writing

Regarding the quality of their writings, all the learners agreed that the treatment on logical fallacies contributed positively to the quality of their essays. Some learners stated that they started to write in a more concise and academic manner, which led to producing better quality writings while some others referred to the decrease in the number of fallacies that were observed in their writings over time. Several learners pointed to the fact that the lack of fallacies would make their writing richer. Regarding this issue, Jane made the following remark "I was writing like a secondary school student and talking about emotions, flowers, and birds. Yet, thanks to our focus on logical fallacies, I started to write about things based on information and evidence". Accordingly, Tony explained his views by stating "The number of my mistakes gradually decreased. In my first writing, I had too many mistakes, but in time they became less. I also noticed that when there were less fallacies, my writing sounded more academic. I'm happy that we had this focus. This is how the writing process must be". It can be inferred that the learners were pleased to have a specific focus on fallacies, which they believed contributed to having better quality essays.

Moreover, some learners shared their views about using a more tentative language. They referred to understanding the importance of using hedging language in writing not to offend anyone, to sound cautious, and to convince someone in a kind manner as opposed to proposing assertive claims. Joe stated about this issue that "I used to write sentences like *Everyone knows that ...*, but now I use phrases like *most people, many people, a majority of people* in my sentences". Similarly, David commented that "For example, when I learnt *ad hominem*, I understood the person's ideas are important and I need to oppose them rather the personality. I believe this knowledge is not only important for the lesson but also for the discussions, in our daily lives and in any context actually". Obviously, the learners could transfer the knowledge they gained to different aspects of their lives, as well. Below are some sample changes made using hedging language after getting feedback (see Appendix 18 for more samples):

Before feedback: Without this information network provided by the technological advancements, world would be a much more chaotic place and people would be much less aware of what is going on around them (hypothesis contrary to fact).

After feedback: It could be argued that integrating our lives with technology has provided benefits such as faster spreading of information or calling out help on a major or minor scale.

Before feedback: As it can be seen, the dependency of people on technology doesn't have negative effects (hasty generalization).

After feedback: But when experts like Dr. Anderson claim addiction is not even the right word for this situation and such behaviors of children are not abnormal, it seems like cutting out technology from our lives is unnecessary.

Before feedback: Therefore, many of us will not survive if we get rid of technology (hypothesis contrary to fact).

After feedback: Therefore, I believe that most of the people would have trouble when they are performing their daily activities if we get rid of technology.

To elaborate on how the quality of their writing was better, students specifically referred to the improvement in certain types of fallacies such as hasty generalizations, missing the point, argument by emotive language, and red herring. Though the learners also stated that they still tended to have challenges with the aforementioned types of fallacies, their improvement was apparent when the whole process was considered. The learners also reflected that they were quite familiar with the repeating mistakes in their essays and were easily able to fix them. Yet, several students reported that they may not be able to fix the errors that have not appeared in their writings since they might not know what to do about them. This may be due to having little experience of logical fallacies and finding some types of fallacies to be more challenging to fix or avoid in the first place. They may also need to be more confident to deal with such fallacies. Below is a sample change made in the presentation of arguments after receiving feedback:

Before feedback: Technology has decreased the quality of the time spent with family and close friends (oversimplification). People are now using social media for communicating such as WhatsApp and Instagram. Texting messages and putting emojis at the end of the sentences are done in a few seconds (red herring). Conveying messages in this way, people lose the chance to make empathy and actually understand the others. For example, when

people go to a restaurant with their family, they always immediately start to look at their smart phones and like other posts on Instagram (missing the point & hasty generalization).

After feedback: Most modern people generally prefer some applications such as WhatsApp and Facebook to communicate. Yet, this form of communication enables people to contact only through words and short sound recordings. Thus, mostly this does not make conveying emotions possible as they cannot see other's body language and facial expressions. However, face-to-face conversations are much more valuable than texting messages since it contributes to share more emotions, interact with others and so improve our relationships. Also, a great majority of people tend to use shortcuts such as "ur" instead of "your" while texting on social media which influences language integrity and grammar structure negatively.

Some other concerns such as feeling the dilemma of politically correct discourse, not being able to notice the fallacies all the time, and lacking the necessary language proficiency to fix the fallacies were also shared. To exemplify, Johnny stated "I am not sure if I have digested everything a hundred percent. I can say that I still have difficulty in naming or identifying some fallacies. Additionally, if a skilled writer has committed fallacies, I may not be able to notice them. I don't think that I'm perfect now, but my awareness has definitely increased and my writing has improved at the end of this process". Johnny's words indicate that though learners may continue to have challenges, the treatment contributed to developing the quality of the writings to a certain extent. For further development, they may need more practice and experience with logical fallacies so that they become more skilled at avoiding them.

4.2.1.4. Noticing and Identifying Logical Fallacies through Guidance

Another significant finding of the interview data was related to the necessity of having guidance in order to be able to notice and identify logical fallacies. Ten of the 13 students stated that it would be harder for them to recognize all the fallacious claims if it were not for the teacher feedback. Some examples of student responses are illustrated below:

S2: We can notice mistakes related to grammar or organization, but I don't think that I would be able to notice logical fallacies on my own.

S3: One thinks his writing is flawless, but with your feedback we were able to see our mistakes.

S6: No matter how my writing seemed free of mistakes, I saw that it wasn't the case when I got feedback.

S10: *While writing the essay, we thought it was flawless and almost perfect when we were writing meticulously as if we were not making any mistakes. Yet, we saw our mistakes one by one after receiving feedback.*

S11: *Of course, I couldn't see my mistakes while writing the essay. It really helped me notice fallacies since they were seen by someone from outside with an educated eye.*

It is clear from what the students shared that they needed teacher feedback to be able to identify the logical fallacies in their essays. Though several students stated that they read their essays to see if logical fallacies existed before submitting their work and fixed some errors, obviously, the majority of the learners needed the guidance and the feedback given by the teacher. This could be because there are more strict and clear rules regarding the use of language and organization when writing an essay. Yet, when it comes to content, a bit of subjectivity is usually involved and it may become harder to find a common ground in terms of the expectations. Logical fallacies are closely related to the content of a written text, therefore; students may have not felt confident about identifying the logical fallacies on their own. Song et al. (2017)'s study revealed similar findings to the current study in terms of the identification of logical fallacies. In the study, learners were unable to detect fallacious statements or explain what the problems were in terms of reasoning even if they could detect the errors. Similarly, in Song and Sparks (2017)'s, it was found that the middle school learners were more successful at questions that required them to choose the relevant evidence compared to those which were about identifying logical fallacies.

Another reason could be that since logical fallacies were a relatively new concept for the learners, they may have not developed a full understanding in terms of identifying them in the first place despite being able to fix them once they are highlighted. Jenny's comment "I don't think logical fallacies can be learnt immediately. Since we make them in Turkish, too, it is much easier to commit them in another language and we cannot understand it. Maybe our previous articles or assignments were full of fallacies, but we didn't know" may well support this conclusion. Consequently, it can be claimed that it is not easy for most of the learners to identify fallacies on their own and when no explicit instruction is given, they may even not be aware of the concept of fallacies or the unsoundness of their arguments. This indicates that it is essential to give explicit instruction on logical fallacies to introduce learners to logical fallacies and raise their awareness. This finding is also supported by Khoiri and Widiati (2017)'s study in which the most crucial implication was identified as the significance of giving explicit instruction to eliminate logical fallacies.

4.2.1.5. Improving Critical Thinking Skills

A multitude of responses was given related to the contribution of the treatment to improving critical thinking skills of the learners. All 13 interviewees touched upon one aspect or another regarding critical thinking skills. Some learners stated that they were questioning the quality and credibility of their arguments as well as thinking about if the reader would understand the given explanations. This may show that the learners gained the habit of evaluating their arguments keeping the target audience in mind rather than writing their essays without taking the readers into consideration and writing merely for the sake of using the language. Below are some learner responses:

S2: While reading my essay after writing it, I especially pay attention to the mistakes that are common in my essays. I'm thinking about where there might be an error. I'm checking if everything sounds logical.

S4: I was only looking from my own perspective. I couldn't put myself in the shoes of the reader and didn't think how the reader would understand my argument. Now, I'm thinking about if the reader will understand what I say, which is also the case for my speaking.

S5: To avoid logical fallacies, I determine a conclusion and contemplate over the possible reasons in my mind. Later, I'm putting them in words so that there will be no problems. I also try to stay within the scope of the writing prompt not to mention irrelevant points.

As it can be understood from the quotes above, the learners have also developed their own strategies to avoid logical fallacies. Identifying, avoiding or fixing logical fallacies are closely related to having a critical approach towards the quality of the arguments. It can be seen that the learners have gained the habit of critically evaluating their arguments over the course of the treatment. In Alagözlü (2007)'s study, though the main aim was to identify the critical thinking elements in learners' argumentative essays, a multitude of logical fallacies were detected in the data analysis process. This also indicates how critical thinking skills and avoidance of logical fallacies are closely related.

4.2.1.6. Benefits in other Areas

In the interviews, the benefits of the treatment in other areas than writing were underlined by 11 participants. Gaining confidence as a writer was the first point mentioned. Several learners reported that having less logical fallacies over time helped them gain confidence due to producing better quality essays. Understanding how logical fallacies weaken the

strength of claims, the learners mostly attached a major importance to avoiding fallacies to become better writers. Having less errors over the course of the study encouraged them to feel as more confident writers.

Another area mentioned by the learners was paying attention to logical fallacies in daily life, discussions, on TV, in the videos they watch on the Internet, in the news, etc. One of the participants, Hector, stated “I cannot listen to my parents without ignoring the fallacies in their sentences. I always feel the need to warn and correct them when I notice a fallacy in their sentences”. Another learner reflected that “Just like writing, fallacies are important when we are convincing someone in a discussion. I try to avoid having fallacies when we are having discussions or notice when my friends resort to fallacious claims”. Looking at such statements, it can be proposed that the treatment was beneficial for not only writing development but also increasing students’ awareness of the quality of arguments they encounter in their daily conversations and discussions.

Several other students added that they kept logical fallacies in mind while they were speaking and doing assignments of their departmental courses. One participant informed that he analyzed his speech for a presentation in one of his departmental courses in terms of logical fallacies to sound more convincing while another learner stated that she self-checked her essay written for a departmental course so as to detect fallacies before submission. Such instances may indicate how the learners embraced the topic and understood its importance for both English courses and other academic studies. Additionally, although avoiding logical fallacies was not targeted for the speaking component of the course, the learners transferred their knowledge to speaking skill, as well. A non-targeted result of the treatment was observed as the increasing awareness of the learners in terms of logical fallacies in spoken production.

A further benefit mentioned by the learners was related to noticing logical fallacies in sources. Several students articulated that they were paying attention to the quality of language in sources to better understand how to produce better quality essays free of fallacies. Learners also mentioned that they were able to notice some fallacies in the sources despite finding it harder to do so if the writer was a good one. In terms of their attitude towards the sources in case of fallacies, some learners stated that they would appreciate the writer less and lose their trust in both the writer and the source while some others mentioned their attitude would depend on the types of fallacies and formality of the source. They stated that if the source was an informal one and if the fallacies were more tolerable, they could

ignore the errors. This could imply that students' knowledge and awareness of logical fallacies could help them find more reliable sources by differentiating them from the unreliable ones. One learner, Henry, had a less embracing approach for the logical fallacies and stated "I don't care if there are fallacies in a source. If I think that the information is good and it is a good source, I can ignore the fallacies". This could mean that the learner still prefers to give priority to the information presented rather than how it is conveyed even if some claims are fallacious.

4.2.2. Negative Attitudes towards the Treatment on Logical Fallacies

Despite the fact that learners mostly adopted positive attitudes towards the treatment, a few students referred to a number of drawbacks. The thematic categories comprise of "uselessness, restrictiveness, disturbing the unity, and complicating the process". Each category is elaborated with relevant explanations and implications based on the interview data.

Only two learners, Henry and Juliana, out of 13 had a less welcoming approach for the treatment throughout the interviews despite referring to certain benefits from time to time. Henry commented that it was not completely useful to focus on logical fallacies by saying "It was useful to focus on them in some parts, but I sometimes thought we focused too much. I sometimes felt I couldn't write. Yet, I also thought I would have written wrongly if I had not known about fallacies. It's good that there are fallacies, but I believe they are not our main focus". To elaborate on the uselessness of the treatment, Juliana stated "If we hadn't focused on them and if I had read the fallacies in someone's writing, I would actually have been disturbed. Yet, we can understand what we read, so I don't think we needed to focus on fallacies explicitly". Such utterings imply that the two learners did not appreciate having a continuous and comprehensive focus on logical fallacies considering that fallacies could only be one part of the components that made up an essay and did not deserve this much concentration. Henry further elaborated that he sometimes made the changes as he had to get higher grades even if he was not willing to do so. It can be inferred that the learners were not content with the fact that there was a special focus on logical fallacies despite appreciating their importance to some extent.

Henry explained why he felt restricted and stated "I had difficulty when I needed to speak very generally. It was as if I wasn't writing but just merging other people's ideas and trying to explain them to someone or feel like an unnecessary middle man who was translating the

same language. The reason was when I presented my own opinions, I felt as if I was committing fallacies”. Henry was a learner who wanted to write in a more informal and flexible manner. Academic writing may sound unnatural to learners especially when they first start writing academic texts and this may make them feel uncomfortable while writing. That Henry felt like another person might have resulted from the new identity he gained as a writer while writing academic essays. Given that avoiding logical fallacies in writing made the learners change at least some of their writing habits and sound more academic, he might have felt restricted due to not being able to put his claims into words however he wished to do. Additionally, it can be inferred based on Henry’s desire to speak very generally that learners’ awareness may need to be increased more to identify very general statements as fallacious and avoiding them.

Juliana mentioned that focusing specifically on fallacies was disharmonizing the essay by saying “There are many elements that form an essay. Writing an essay is both very easy and difficult. Logical fallacies don’t make this process any easier. On the contrary, they cause us to dig up the essay and this disturbs the unity and harmony of an essay”. Similarly, Henry mentioned that he had a more holistic approach towards logical fallacies rather than treating them as isolated units of errors and therefore would prefer if feedback was also given on the unity between the paragraphs in terms of logical transition rather than being merely at the sentence level. These show that the learners were dissatisfied with dealing with logical fallacies as smaller units of the essay and preferred to look at the essay from a more general perspective.

The learners also thought that focusing on logical fallacies made the writing process more difficult and longer. Juliana stated “If there is an error, it already stands out. Yet, categorizing types of fallacies and using an additional guide makes the process longer and actually affects it negatively”. She further added that “For writing an essay, you just need a paper and a pencil and reading it should be in the same way. Needing a paper and coding makes a student think it is a complicated process”. Such an approach could result from the fact that the learners might have never used a guiding document previously for producing texts and they might be viewing writing as an activity done simply putting the thoughts in mind to words without needing to refer to a document for the evaluation of their ideas. Additionally, the learners may have seen the focus on logical fallacies as a burden since one more component was added to the expectations that were already difficult to meet.

4.2.3. Beliefs about the Process Writing Approach

All the learners reflected that the process writing approach was useful in the treatment process. For categorizing the learner responses, two main thematic categories which are “benefits” and “drawbacks” appeared. Though the majority mentioned a variety of positive contributions of process writing approach, four learners referred to several drawbacks which are mainly related to “over-dependence on teacher corrective feedback”.

4.2.3.1. Benefits of Process Writing Approach

The learners stated that they could see and understand their mistakes more clearly after getting feedback and they could also fix more mistakes in their 2nd drafts. This attitude is also supported by their aforementioned wish to receive guidance from an educated eye, who is the teacher. One learner commented that teacher feedback informed them about what to be careful with in the future writing tasks. When the challenges of the learners are considered in writing lessons, one of them is understanding the expectations since different teachers may have different expectations. Therefore, having some controlled practice or having the students write only one essay and giving feedback on logical fallacies may not be adequate. Instead, letting learners write several writing tasks can help form a common ground between the teacher and the learners in terms of expectations and practice logical fallacies more extensively.

A further benefit was mentioned by Sam, who concluded that “We can see what changes when the errors are corrected in our 2nd drafts”. This can show that the learner had the opportunity to compare the quality of their arguments after they got feedback and worked on them. In teaching logical fallacies, integrating controlled practice exercises could be useful in reinforcing their knowledge and raising awareness, but it seems like working on the learners’ real and individual errors is a more beneficial practice. Furthermore, three of the learners commented that it was good to have three writing tasks for which the process approach was followed to have practice about logical fallacies. It can be claimed that the learners may not be able to digest what they have learnt about logical fallacies by writing one task and getting feedback only once. To check if they have grasped the content, it could be better to have several writing tasks and observe their improvement over time. Since logical fallacies require having a more critical approach and changing certain writing habits, the improvement may not be observable in only one task or it could be small. Therefore,

students may need to gain more experience about logical fallacies and their longitudinal development can be observed by giving feedback to several writings.

The learners referred to another contribution of process writing approach which is to provide room for improvement. Tony stated “It would be bad if the 1st drafts were graded and I would be demotivated, but we had the chance to work on our mistakes and improve our writing”. Another learner, Henry, concluded that “I can understand the mistakes better after some time passes. While waiting for the feedback, I could sometimes think of solutions about my possibly fallacious claims or arguments I was not definitely clear about”. Such statements show that some learners did not regard getting feedback and writing 2nd drafts as a burden. On the contrary, they viewed this process as a chance for further development and the time interval between the 1st and 2nd draft as an opportunity to ponder upon the arguments they were not sure about.

4.2.3.2. Drawbacks of Process Writing Approach

The main drawback of process writing approach was over-dependence on teacher feedback due to knowing that the errors would be highlighted by the teacher anyway as mentioned by Henry and Juliana. This prevented them from putting effort to fix possible errors in their 1st drafts. One reason might be that since the 1st drafts were not graded, the learners might have wanted to complete the 1st draft without spending too much time and work more meticulously on the 2nd drafts, which were graded. Similarly, Tommy stated “I sometimes kept a possibly fallacious claim in my 1st draft on purpose to get feedback on it”. Looking at what the learners stated, it can be concluded that the learners should be encouraged to pay more attention while writing their 1st drafts rather than expecting the teacher to highlight the errors for them. Related to forming a better context for the ideas, there were two opposing views. While Sam stated that she could form a better context for her arguments in the 2nd draft by seeing the weak conclusions, Juliana commented it was harder to try to fix the claims. It would be valid to infer that the expectations and individuality of the learners might have been the reasons for these differing attitudes. Some learners might regard writing a 2nd draft as a chance to improve the context with the guidance of the teacher feedback. Yet, it could be harder for some other learners to make changes about the claims possibly because the learners form an idea in their mind and when they need to fix it, making only structural changes will usually not be enough and they may even need to change a paragraph

completely. This could be a reason why Juliana found improving her ideas challenging after receiving feedback.

4.2.4. Beliefs about Coded Feedback

Regarding the coded feedback utilized in the course of the study, 11 out of 13 students had a positive approach. In the interviews, the learners referred to a variety of benefits of coded feedback such as practicality and being memorable like math formulas. As for the drawbacks of this type of feedback, several concerns were shared by two of the learners.

4.2.4.1. Effectiveness of Coded Feedback

Many of the learners had a positive attitude towards coded feedback and underlining the fallacious claims. The most frequent response was that coded feedback was practical due to being fast and time-saving. Jenny mentioned “There would be a crowd of feedback without codes and you would have to write the same things over and over again”. Jenny’s comment shows that coded feedback can make the feedback process more practical for both the teachers and the learners by eliminating long and repetitive sentences written in the margins. Tommy also added “When the teacher wrote sentences to give feedback, I couldn’t understand if I was repeating the same errors or I was sometimes unsure about what the teacher meant. Therefore, if sentences were written, I wouldn’t understand if it was a new mistake since the teacher would be paraphrasing”. Tommy’s words indicate that coded feedback was useful for eliminating misunderstandings and showing the learners their repeating mistakes over tasks more clearly.

As for the benefit about making the understanding of errors easier, the learners stated coded feedback was useful since it directed them to the specific part in the Teaching Guide and they could easily revise the relevant information about the errors by re-checking the explanations, examples, tips, and making the necessary adjustments accordingly. They added such clear feedback contributed to helping them concentrate on the specific mistake rather than contemplating over what the teacher might have meant if sentences had been written in the margins. Some students also mentioned that codes were more memorable like math formulas. Most of the learners who participated in the study were from engineering or other numerical departments, which might have been a reason why they liked coded feedback. One of the learners openly stated that the codes resembled a method they used in

their numerical lessons. This finding may show that teachers may vary their feedback type depending on the learner profile by also utilizing coded feedback in addition to teacher sentences written in the margins or on the paper.

In a similar vein, the learners shared positive views about underlining the specific errors rather than giving overall feedback. They thought that it would be hard for them to find where the specific mistake was and scan the whole text or the paragraph to discover the erroneous part. This may imply that the learners did not feel confident about identifying the specific errors on their own and rather preferred to work on the errors that were already categorized and labelled as erroneous by the teacher. Considering the fact that the learners had never had such a special focus on logical fallacies and it was a quite novel concept for almost all of them, it is very understandable that they wanted the process to be guided rather than trying to figure out the errors by themselves, which could actually have caused them to end up in despair.

4.2.4.2. Ineffectiveness of Coded Feedback

Similar to her thoughts about the treatment process, Juliana found coded feedback scary and claimed that it made the writing process harder. Therefore, she would prefer the feedback to be written in the margins rather than the codes. Another learner, Austin, stated that despite finding coded feedback beneficial and practical, there could be more explanations about why there is a mistake for some of the logical fallacies such as *missing the point* and *irrelevant conclusion*. Austin's point may be valid for the aforementioned types of fallacies. Some of the fallacies could be more explicit and easier for the learners to fix partly because they usually concern only one single sentence and a specific part of it such as *hasty generalization* or *argument by emotive language*. Yet, since *missing the point* and *irrelevant conclusion* fallacies require the learners to connect their arguments logically and offer rational justifications, it might have been more difficult for them to understand what the problem was when the error resulted from *missing the point* or *irrelevant conclusion*.

Related to the ineffectiveness of underlining errors, Tony stated "To be honest, I only checked the sentences which were underlined. I didn't check my essay for more errors or the rest of the essay for coherence". This comment could actually be closely related to over-dependence on teacher feedback and it may be mentioned as a downside of highlighting errors for the learners. Yet, compared to the abundant benefits of underlining erroneous parts

and giving the learners the opportunity to produce better-quality work, this could be mentioned as a minor drawback.

4.2.5. Perceptions about the Teaching and Learning Materials

Several teaching and learning materials as well as a discussion activity were developed and utilized for different purposes throughout the study. Learners' perspectives of the controlled practice materials were not asked in the interviews since they were already of the usual type. The learners' perceptions of the Teaching Guide, sentence analysis activity, forum discussion, and self-evaluation sheet were gathered to discover if they found these materials and activity useful in learning and practicing logical fallacies. Following the coding process, the related codes were classified under categories. Ultimately, thematic categories were determined based on the categories that emerged depending on the codes. The thematic categories were determined as positive and negative attitudes and for the self-evaluation sheet, the neutral attitudes thematic category also appeared. Table 27 illustrates the categories, thematic categories, frequencies, and sample key terms gathered from the qualitative data.

Table 27

The Perceptions of the Learners of the Teaching Materials and Activities Used in the Treatment

Category	Thematic category	Frequency	Sample key terms
Perceptions about the Teaching Guide	Positive approaches	12	Practical Understanding and fixing mistakes easily Promoting autonomous learning A guide that shows what to do Preventing misunderstandings
	Negative approaches	1	Making us think it's a complicated process
Perceptions about "Sentence analysis"	Positive perceptions	11	Fixing our own or potential mistakes Encouraging, fun, interactive, engaging Challenging but useful A natural activity since the mistakes were real More memorable and informative
	Negative perceptions	2	Not effective Sentence-paragraph-essay wholeness is broken
Perceptions about "Forum discussion"	Positive beliefs	8	Learning about different perspectives Having practice Providing interaction, fun activity Learning from each other
	Negative beliefs	5	Not effective Unnatural – made up on purpose I had a holistic approach to fallacies Too obvious examples
Perceptions about "Self-evaluation sheet"	Positive attitudes	3	Helping me see the percentages of my mistakes Seeing the decrease in mistakes over time
	Negative attitudes	6	Unnecessary Hard to look at it and write at the same time Wanted to concentrate on my essay
	Neutral attitudes	4	Could be useful for those with lower proficiency Didn't use it, but could be useful if I used

4.2.5.1. Perceptions about the Teaching Guide

The Teaching Guide was the most significant material utilized in the study since the learners were directed to it to find out the details of the codes that were written on their 1st draft, therefore making it possible for the researcher to use coded feedback. The learners' perceptions of the Teaching Guide were significant since they had never had such an experience before and their responses could give some insight into varying the type of feedback in writing classes. All the learners but one had positive perceptions about the utilization of the Teaching Guide in the study.

Of the 13 learners who were interviewed, 12 of them had a positive attitude towards the use of the Teaching Guide. Many of the learners found it practical and thought that it made the

process more systematic. The reason could be that the same cycle was repeated for the writing tasks over the weeks and the learners could refer to it whenever they needed since it was there all the time. Tony considered that the guide was like “a small capsule” in which you could find a lot of information in a condensed way. One of the learners thought that the codes made understanding easier. Several students stated that they were still keeping it for their future studies and they were even trying to show it over the screen during the online interview, which might be a sign of their enthusiasm and embracement. In a similar vein, Sam commented that “I not only use it for English lesson but also for writing the essays in my departmental courses since fallacies are important for all our essays and assignments”. From Sam’s words, it can easily be understood that she has understood the importance of avoiding logical fallacies in academic discourse rather than limiting it to the essays written in English lessons simply for getting grades. One learner even stated that she got a higher grade from one of the essays she wrote for a departmental assignment. Though the avoidance of logical fallacies may not be the only reason for getting a higher grade, it may demonstrate how the learner took logical fallacies seriously and regarded them as quite important for her assignments. It can be concluded that explicitly focusing on logical fallacies is significant for not only the English courses but also other departmental courses.

The learners also explicitly stated that the guide helped them understand the expectations and the feedback given as well as making it easier for them to fix their mistakes. Looking at what the learners shared, it can easily be stated that the learners found the coded feedback and the guide as complementary. This means that the learners kept checking the Teaching Guide and benefiting from it throughout the study rather than memorizing the codes and their correspondences and putting the guide away. Some of the learners also mentioned that the guide enabled them to work on their own without asking others, which actually promoted autonomous learning and several learners informed that they checked their essays against the teaching Guide to see if they have any fallacious claims before submitting their work. John stated “The Teaching Guide was always with me or on our class page. I could check it even at late night. I didn’t have to ask anything to you since it showed me what to do”. John’s words suggest that the Teaching Guide had a role in decreasing the dependence on the teacher to understand what the feedback meant by clearly presenting the information they needed to understand and fix their errors. One learner commented that having a limited number of fallacy types was good since it would be much harder to concentrate on too many types at the same time.

Regarding the explanations part in the document, the learners commented that they could understand what the specific fallacy was when it was harder to understand logical fallacies, especially at the beginning of the treatment. One learner defined this part as “the rubric of the feedback” which also gave them the solution. This approach further supports the fact that the learners regarded coded feedback and the guide as complementary. Henry highlighted another benefit of the explanations part by stating that “If we had to search what each fallacy was on our own, maybe we would find wrong explanations or misunderstand the information and share it with our friends and they would also learn the wrong information. Yet, when you provided them, the misunderstandings that could result from searching them individually were eliminated”. It can be understood that though it is important to encourage discovery learning, it could be a better idea to provide the learners with the basics of the logical fallacies so that everyone meets on a common ground. The learners could be encouraged to discover their own errors or the ones in the sources and in their peers’ texts for further practice after establishing a mutual understanding of what each fallacy is about. The learners also shared positive views about the examples part in the document. One of the learners stated that she was surprised to see how the examples resembled her own errors. Some learner responses about the examples part are shared below:

S2: It was good that there were examples. Otherwise, the explanations would be abstract.

S5: The explanations for some fallacies were difficult for me to understand. By looking at the examples, I could understand the explanation better.

S11: The examples in the document were very similar to our own errors. It was like I wrote them. Therefore, they helped me understand why my sentence was fallacious.

Such statements indicate that the learners benefitted from the given examples to better understand their own mistakes and the explanations in the document. It can also be stated that it is more beneficial to provide the learners with examples of fallacies that they may themselves commit rather than presenting examples that are contextually far to them.

As for the tips part in the document, one of the learners stated that they were more memorable than the explanations while writing the essay and the tips helped them have less errors over time. July stated “I wouldn’t know how to fix the errors especially at the beginning if there were no tips, so they were really useful”. Therefore, it can be concluded that tips helped learners produce more sound arguments by working on their fallacious claims. It was also observed during the study that the students were trying to utilize the given tips accordingly

depending on the nature of the error. Some of them even developed their own strategies to fix their errors by building on what was written in the tips part. This could indicate that tips gave the learners a clue as to how to fix their errors and they found their individual ways of dealing with the erroneous claims.

Only one of the learners participating in the interview shared negative views about the Teaching Guide. Similar to her thoughts about the treatment and the coded feedback, Juliana thought that the Teaching Guide made her think the process was a complicated one and she would prefer to have written feedback instead of checking the document. She also added that despite being useful, there was no need for the Teaching Guide. Juliana might have found it as an extra burden to check the document to make sense of the coded feedback and this could be a reason why she preferred the feedback to be openly given in the margins. This shows that the learners' awareness of the differing feedback techniques may need to be increased so that they become more welcoming of coded feedback.

4.2.5.2. Perceptions about Sentence Analysis Activity

In this study, the learners were encouraged to discover logical fallacies through self-explanation rather than resorting to expert-explanation method (Diana et al., 2018). To this end, rather than dealing with samples collated from different sources, the real fallacious claims of the learners were analyzed to introduce logical fallacies. The errors were selected from the pre-test writings of the learners and fallacious claims exemplified different types of fallacies. 11 out of 13 learners had a positive approach towards this learning material while two learners had negative perceptions.

Many of the learners found the sentence analysis activity quite useful. The learners described the activity by using positive adjectives such as “encouraging, fun, interactive, engaging”. Linda stated “If you had given the Teaching Guide before doing such a task, we would probably have been panicked and demotivated. Therefore, this activity was quite useful”. Some other learners commented that this activity prepared them for the focus of the writing component of the course by showing that there are fallacies and they must be avoided. By looking at the words of the learners, it could be inferred that sentence analysis activity helped to make a smooth introduction to logical fallacies in a guided and controlled way without arousing anxiety. Some of the learners referred to the benefit of the activity in terms of providing interaction with their peers, having fun together while learning, and approaching the arguments in the activity from different perspectives through discussions. This could

indicate that the activity was beneficial in engaging the learners in the topic, introducing the subject matter in a warm and comfortable environment without students' feeling pressured, panicked, and lost.

The learners appreciated it that the sentences in the activity were taken from their own essays and they were actually quite happy and surprised about this. One of the learners also added that it was quite beneficial to go over the sentences shortly after writing them in a fresh way. It can be suggested at this point that making use of the learners' own errors could serve as a motivating factor and appeal to their affective side, which may in turn encourage them to be more involved in the lesson. Additionally, one learner concluded that "Finding the errors of others was a challenging but useful activity". Several students agreed that despite not making the mistakes themselves, it was useful to see the potential mistakes they could also make. George stated "We are studying in the same class and most of us have a similar level of proficiency. Even if I did not make the mistakes, I thought that I would also have written such sentences when I looked at them. Therefore, it was really useful". George's words indicate that in addition to learning from their own errors, the learners learnt from their peers' errors, as well.

Most of the learners stated that they thought there were no errors when they first saw the sentences and it was challenging to detect them. Yet, they also added that it was better to discover logical fallacies through guidance rather than being given a list of them and told to memorize them. A few of them also added that technical information was boring and logical fallacies became more memorable and informative in this way. Brian commented that "It was a natural activity since the mistakes were real. It was clear that the people who wrote the sentences really thought in that way. Therefore, I liked this activity". As it can be understood from Brian's words, the learners enjoyed dealing with and trying to fix their own mistakes rather than working on fabricated ones.

Two out of 13 learners found sentence analysis activity as ineffective. Henry and Juliana both thought that despite being useful to have practice about logical fallacies, the activity was ineffective since sentence-paragraph-essay wholeness was broken. Juliana stated "In the activity, we only read the specific sentences, but we didn't know what the previous and following sentence was. If we had seen the whole context, maybe the claim would have sounded acceptable". Juliana may have a point for certain types of the fallacies such as *missing the point* and *irrelevant conclusion*. Since these fallacies usually concern the logical harmony of several sentences or claims as opposed to the ones which could be observed at

the sentence or even word level such as *hasty generalization* and *argument by emotive language*, knowing the whole context could help them better understand what the fallacy was. It can be concluded from what Juliana stated that providing the learners with a broader context in which the fallacies are observed can help make the activity a more meaningful one.

4.2.5.3. Perceptions about Forum Discussion Activity

For the forum discussion activity, the forum option on the class page was utilized to enable a better flow of interaction among the learners. The task requirements were shared, explained, and exemplified through a document prepared by the researcher. Basically, each student needed to write two fallacious claims. Then, they needed to respond to the fallacious claims of one of their friends by identifying the type of fallacy and writing why the claims were fallacious. Finally, the student who first wrote the fallacious claims needed to check his/her peer's identification and the given reasons and comment on if they were correct or not. Among the purposes of this activity were checking understanding of the learners, letting them work on an enjoyable activity, and enabling more interaction between the learners. Though sentence analysis activity was found to be quite useful by almost all learners, forum discussion activity was thought as beneficial by fewer learners. While eight out of 13 learners had a positive approach towards the activity, the other five learners found it ineffective.

The learners thought the activity was useful in terms of giving them further practice on logical fallacies and learning from their peers as well as seeing different perspectives by reading their friends' entries. Under some posts, fruitful discussions were going on about the identification of the fallacies, the reasons and how they could be fixed. This may indicate that the learners were engaged in the activity and were interested in discovering more about logical fallacies. Several learners used the adjective "fun" in their descriptions. Some other learners appreciated the interactive aspect of the activity and liked it that the writer responded to their answers. Sam stated "It was good that we needed to write two sentences because we could at least see a good example even if one of them was not so good". In a similar vein, one of the learners concluded that seeing more mistakes helped them have more awareness about logical fallacies.

When it comes to the ineffectiveness of the forum discussion activity, five of the 13 learners shared their concerns. Juliana referred to the fact that sentence-paragraph-essay wholeness was broken due to focusing on isolated errors with no context. Henry pointed to the same

issue and he said “I had a more holistic approach to logical fallacies, so focusing on bits and pieces was not so effective”. The differing preferences and approaches of the learners were observable in their attitude towards this activity. It can be stated that though the context may seem to be missing, the limited context in which the fallacy was observable still served its purpose to give further practice and promote fruitful thoughts, which was obvious when the responses of the learners who stated they benefitted from the forum discussion activity were considered. Yet, to appeal to more learners and cater for the shortcoming of potentially limited contexts, such an activity could be supported with further activities which have broader contexts. In this way, learners can be given the chance to evaluate arguments in wider contexts. Another learner, Tony, stated despite finding the sentence analysis activity quite useful, he thought forum discussion activity was ineffective because “the mistakes were made up on purpose and therefore they were quite unnatural”. Tony’s words may well indicate that the learners enjoyed working on real and natural errors more as opposed to dealing with fabricated ones. Brian explained why he found the activity ineffective by saying “Some of the examples were too obvious and they did not require critical thinking. They were too simple”. Looking at what Brian stated, it is possible to infer that some learners preferred to have activities which required a mental effort for identifying and explaining logical fallacies in their friends’ samples. As a result, it can be concluded that while introducing and practicing logical fallacies, both sentence level errors and those found in a broader context could be integrated into the lessons depending on the needs and preferences of the learners.

4.2.5.4. Perceptions about Self-Evaluation Sheet

The self-evaluation sheet was the least favorable material among all. The learners were encouraged to use it by mentioning the possible benefits rather than being required to complete it for the writing tasks. The purpose was to give flexibility to the learners and learn about why they used or preferred not to use it. Only three learners stated that they used the sheet and benefitted from it while six learners did not use it at all and had negative perceptions about it. Four learners had a more positive approach towards the sheet despite not using it.

One of the learners stated that the self-evaluation sheet was beneficial since it helped him see the percentages of his mistakes and he could compare the 1st and 2nd drafts of the essays thanks to it more visibly. Another learner referred to a similar benefit and commented that

she could see the decrease in the number of the logical fallacies that were found in her essays. It can be inferred that encouraging learners to use a self-evaluation sheet could help them see their improvement over time more obviously.

The main message conveyed by the negative perceptions seemed to be related to “concentration”. Tommy stated “I didn’t use the sheet because I wanted to concentrate on writing my essay”. Similarly, David commented that “it would be hard to look at the sheet and write at the same time”. July also thought that she did not need to use the sheet since she was trying to write meticulously and would not be able to notice the logical fallacies in her essay by using the self-evaluation sheet. It can easily be concluded from the words of the learners that though most of them were reading and checking their essays to detect logical fallacies, they did not want to complete a sheet in this process seeing it as an obstacle to their concentration.

Some learners were more appreciative of the self-evaluation sheet by claiming that it could have certain benefits despite not using it themselves. Two learners stated the sheet could be useful if they used it while the other two learners thought it could actually be useful for those who may have a lower proficiency. Henry stated “I’m someone who usually writes his mistakes in his mind. I felt it was a waste of time because even if I used it, I could still make some mistakes. I used such sheets in high school, too, but I never liked them. I believe I don’t have too much difficulty with writing because my English is good. Yet, those with a lower proficiency can benefit from it and they may actually need it”. It can be concluded that though the learners appreciate the possible benefits of the self-evaluation sheet, they were not eager to use it for evaluating their own essays.

4.2.6. Observation Notes during Explicit Instruction on Logical Fallacies

When the students were first given the document with a collation of their fallacious claims in the essays written as the pre-test, they initially attempted to identify language related mistakes despite being told that they needed to detect problems concerning content, namely the meaning conveyed by the claims. This may imply that learners tend to focus their attention more on language rather than content at first sight when they are asked to identify problems in the given sentences. After being reminded to work on the assertions, they first stated that the sample fallacious statements looked perfect to them and they could not identify any problems in how the arguments were proposed. Some were more interested and eager to continue examining the sentences with their peers. Yet, some were reluctant to spend

time on trying to discover the problems in the statements. Only with guidance by the teacher, they were able to approach the sentences from another perspective. Soon, they could relatively more easily formulate ideas related to the errors of reasoning in some of the claims (easier items 1, 3, 6, 7, 9, 11, 12). However, despite starting to gain more awareness, some of the errors still looked difficult to identify and they insisted that there was no problem and they would definitely include such statements in their essays to support their arguments (challenging items 2, 4, 5, 8, 10, 13, 14).

Item 1: *There are a lot of families who stop communicating at home and start playing games on their mobile phones instead. There are even clinics that help people to stop this addiction.*
(Red herring & Irrelevant conclusion)

Despite not being able to identify it at first glance, after some careful thought, the students were able to articulate the problem in the claim with less guidance compared to the challenging items. They reported that not communicating at home is not an addiction that requires healing at a clinic. Clinic treatment is for more serious addictions and the steps that lead one to having treatment at a clinic because of non-communication with the family members are missing in the claim. They said that the problem and the outcome were not equal and the attention was diverted to another issue. As a solution, they offered that the writer must either offer a more suitable result of lack of communication at home or mention the missing steps between this non-communication and going to a clinic.

Item 2: *Modern parents use technological devices as baby sitters for their children.*
(Hasty generalization)

The students could not detect the problem in the second sentence at all. Probably because technology is so common and they were born into it, they see a lot of parents, and maybe their own parents, who use technological devices as a baby sitter while trying to make them eat or sleep. They said the sentence was perfectly fine and there was no problem in terms of the argument. Some of them even tried to find grammatical mistakes since they thought it was a very good and valid claim. After a few guiding questions such as “*Can you absolutely make sure that all the modern parents show this behavior?*”, “*Is it possible to find even a few parents who don’t utilize such devices as baby sitters?*”, “*Is it possible to talk to all the modern parents if they use these devices as baby sitters?*”, they understood the fallacy in the given argument. They gave the suggestion that the writer could simply include some words or phrases such as “*some, most, a lot of*” to avoid hasty generalization fallacy in this claim.

Item 3: *Technology is part of our lives with its advantages and disadvantages. Nowadays, we should benefit from its advantages and try to avoid its disadvantages. It can be an important part of our lives, but it is not all our lives.* (Begging the question)

The students could easily say that there were three repetitive ideas in the given part. They added that the writer was going around the same idea and it felt like s/he was stuck and couldn't move on. As a solution, they offered that the writer could formulate one concise sentence and it would be enough to convey the message that is attempted to be given in these three sentences.

Item 4: *These days, the biggest issue between the young and old generations is whether we have become too dependent on technology.* (Oversimplification)

The students had difficulty identifying the error in reasoning in this claim. They said it was a real and common problem most probably they are usually blamed for being dependent on technological devices especially mobile phones. It was a very personal problem and they couldn't focus on the message given by the statement. They failed to pay attention to the structure "*the biggest issue*". Just like the case in hasty generalization sample, they were only able to approach the sentence from another perspective thanks to some guiding questions such as "*Is it really the biggest issue between them?*", "*Are there no other big issues than this between the old and young generations?*". As a solution, they agreed that saying "*one of the biggest issues*" could help the claim be more sound or the claim could be reworded as "*The issue of over-dependence on technology has been a controversial one between the young and old generations*".

Item 5: *Doctors like Mike Jeff (DoctorMike on YouTube) give advice about how to avoid the virus.* (Appeal to authority)

This was an interesting and tricky sample for the students. They strongly advocated that the sentence was perfectly fine and they would definitely include such sentences in their essays to support their views. Therefore, they leaned back and sat comfortably since they were absolutely sure that there was no problem in the claim. The students were thinking that since the person referred to is a doctor, it was fine to benefit from his views. In this circumstance, several guiding questions were directed to lead them to think more critically such as "*Is Doctor Mike Jeff and expert about the virus even if he is a doctor?*", "*If you refer to a doctor with a YouTube channel, do you implicitly imply that one must believe in him because he has a channel and is a popular figure?*". After asking these questions, they understood the

fallacy in the claim and suggested that a person with expertise about the coronavirus must be cited to make the claim free of fallacy and convincing.

Item 6: *Many people claim smart phones made children more aggressive. This is a misconception led by the journalists, politicians, or anyone who desperately seeks attention.* (Ad hominem)

This was another confusing and tricky sample for the students, yet, they were able to identify it with less difficulty compared to the challenging items. The students stated that the arguments of a group of people were specified and there was no problem. When they were asked to look at it more carefully one more time, they still thought the claim was acceptable. At this point, some guiding questions such as “*When you say ‘seeking attention’, is it an acceptable and valid way of refuting someone’s claim?*”, “*Is the person refuting the argument of those people or attacking their personality?*” were asked to encourage them to be more critical of the statement. Then, they realized that their attention was diverted to the behavior of the people rather than their claims fallaciously. As a solution, they offered that the writer must keep the focus on the claim rather than blaming the people and mention the reason(s) why journalists, politicians, or some other people believe smart phones made children more aggressive.

Item 7: *Technology has made man’s life much easier. It allows man to live a longer and healthy life, a life of convenience. For example, Amazon is a company allowing the average human to buy whatever he desires from the comfort of the home.* (Irrelevant conclusion)

Finding and explaining the fallacy in this claim was easier for the students and they could detect it with less guidance compared to the challenging items. They commented that several advantages of technology are mentioned as providing a longer, healthier, and more convenient life, yet, the explanations about ‘how’ exactly technology brings about such benefits are missing. It was concluded that several steps were missing in reaching the conclusion. They also added that the example given about Amazon was related to ‘convenience’ aspect as mentioned in the previous sentence, but it did not support the arguments about ‘longer and healthier’ aspects. The students offered that the writer should select only one of the benefits and explicitly state ‘how’ technology brings that benefit by mentioning each step rather than providing a list of advantages lacking explanations and left to the reader’s understanding.

Item 8: *Many diseases occur because of using technology a lot.* (Oversimplification)

This was another challenging fallacy for the students to identify. They again reported that the argument was valid and they would definitely include it in their essays. They gave examples such as ‘eye-disorders, less physical activity, obesity etc.’ for the diseases that occur because of technology use. Some guiding questions such as *“Is technology the only reason for the occurrence of these diseases?”*, *“Can some other factors be influential in the occurrence of the diseases?”* were directed to enable them to discover the error in reasoning. After contemplating over the questions, they commented that technology could not be held responsible alone for the diseases mentioned. It may be one reason, but it was not the only reason and technology was shown as the ‘bad guy’ in the claim. They offered certain solutions such as using modal verbs (may, might etc.) to be tentative rather than assertive or mentioning technology as being one of the factors contributing to the occurrence of such diseases.

Item 9: *Modern world is too dreadful to live alone, so we need to have friends.*
(Argument by emotive language)

The students could identify the fallacy in this claim with less difficulty and guidance compared to the challenging items. The sentence was read out loud by emphasizing the word ‘dreadful’ to draw the students’ attention to the emotive language. Upon this, they stated that ‘dreadful’ was not an academic word. Several guiding questions were directed to the students to help them identify the problem with the use of this word such as *“Is ‘dreadful’ a neutral and objective word?”*, *“Must a conclusion be reached based on sound reasons such as evidence and fact or on emotions which are personal interpretations?”*. These questions helped them better understand the problem with using ‘emotive language’ to present or support arguments. The students offered that the writer must use neutral and academic words and base the conclusion on more sound reasons.

Item 10: *It divides people into two sides, some of them believe that technological devices have a negative effect on our lives, yet some people think that it increases the quality of our lives.* (False dilemma)

This was another tricky and challenging fallacy for the students to identify. Just like the sample about ‘DoctorMike on YouTube’, they were absolutely certain that there was no problem in how the claim was made. One of the students stated that he would definitely have such a strategy to sound assertive and convincing and added that this was the purpose of writing an argumentative essay. He said that he would not like to seem unsure of his ideas by softening his language using a tentative language. At this point, a whole class discussion

was held on the reason for using hedging language and sounding convincing without resorting to unacceptable, dishonest, or fallacious ways. To explain the error in reasoning in the given claim, a student came up with the word ‘polarizing’ and it helped the students realize the error in reasoning. He said that the sentence was polarizing people without leaving them with a third option and the word ‘divide into’ was a very powerful one. Later, the others also agreed that it was possible for some people to believe that technology has both positive and negative influences on our lives and they must not be disregarded in such a polarizing way.

Item 11: *After the introduction of technology into our lives, so many wars happened.* (False cause)

The students were able to identify the fallacy in this sentence with less difficulty compared to the challenging items. They were at first overgeneralizing the effects of technology on the wars that happened in the recent past. At the beginning, they commented that the claim was valid since the powerful countries could more easily wage wars and exert power over the less powerful and poorer countries thanks to the developed technological devices they have. They further added that technology was now the most significant indicator of the strength of a country in threatening others. While contemplating over the changing battle conditions with the integration of technology, they were missing the fact that the claim holds technology responsible for the occurrence of the wars. At this point, some guiding questions were useful in helping students see the causality and sequence relationship in the given claim such as “*Can we absolutely say that technology is the only reason why so many wars happened?*”, “*Might some other factors have contributed to the occurrence of the wars?*”, “*Is it fair and valid to blame technology for causing so many wars just because they happened one after another?*”. After such questions, they started to look at the claim from a more critical perspective. They said that some other factors including ‘greed of the powerful countries, the wish to have for more territories, misunderstandings, nationalism, religion, etc.’ could also be influential in the increase in the number of the wars occurring. As a solution, the students offered that a more tentative language should be used and technology must be mentioned as one of the factors having a role in the rise of the wars (e.g., Technology has contributed to the occurrence of so many wars).

Item 12: *I believe technology has made our lives worse and there are many other people who think like me.* (Bandwagon)

This was an interesting sample and after gaining some awareness about logical fallacies while talking about the previous items, the students could easily tell that it was an invalid argument. They explained that people without authority must not be referred to support the personal views and added that a popular idea is not necessarily an acceptable and a good one. As a solution, they offered that the claim must be based on fact or evidence, or an expert must be cited rather than pointing at ordinary people's beliefs.

Item 13: *Eliminating technology from our lives would be like cutting our arms.* (False analogy)

This was the most controversial item among all. The students resisted that there wasn't a fallacy in this claim. Different reasons could be referred to, but I believe the reason why they firmly believed this claim was a valid one is because they were born into the age of technology and are members of Generation Z. The students in the study have almost no idea and experience about how life was before the widespread existence and use of technology. It is like an indispensable part of their lives and most of them stated that they could not live without their mobile phones, the Internet, or the computer. Yet, if one was to talk to the members of Generation Y, their reaction to the given claim could be different since they lived without technology in some part of their lives and technology was later involved in the flow of their lives. Therefore, technology might not be so indispensable for Generation Y compared to Generation Z. Because of this reason, almost all the students thought that the claim and the analogy was valid and equal by showing their mobile phones and saying that if they were gone, their right hand would be gone, too. Only several students thought the analogy was not equal because they would never choose technology over losing their body parts. Their hands were much more valuable and technology was not as important for them. Therefore, it could be concluded that depending on the generation one was born into and the value of technology to the individual, different interpretations can be made related to such as analogy. As a solution, it was finally agreed that the analogy must be reworded to sound acceptable to the reader.

Item 14: *If you do not put time limits on the children's technology use, they will not go out to spend time with their friends, become asocial and have psychological problems like depression.* (Slippery slope)

This was another challenging item for the students. They couldn't realize the error in reasoning and said that they would definitely include such claims to sound more assertive and convincing. They said that writing such sentences could make the meaning stronger and

give the message that the issue is a serious one and must be taken seriously by the reader, as well. Some guiding questions were directed to allow the students to have a more critical approach such as “*Can you absolutely know that all these results will be faced?*”, “*Are all the children who do not go out asocial and have psychological problems?*”, “*Does the writer base his/her claim on fact or evidence?*”, “*Are the results mentioned by the writer proven or hypothetical?*”. Such questions helped them understand why a claim must not be made in such a manner if one wants to avoid committing a logical fallacy. As a solution, they offered that rather than mentioning a list of possible but hypothetical outcomes, the writer must depend on fact and evidence and besides show the causality relationship by explaining the steps that lead to the specific outcome.





CHAPTER V

CONCLUSIONS AND IMPLICATIONS

In this chapter, the conclusions derived from the findings and discussions of the current study as well as implications for ELT and suggestions for further research are presented.

5.1. Conclusions

The present study was mainly designed to determine whether the logical fallacies in the students' argumentative essays could be reduced through teacher corrective feedback. To this end, three research questions were formulated, which determined the design of the study and the data analysis process. According to the findings and the results provided, all three research questions are replied and the relevant conclusions are drawn in line with them. The first question sought to unveil the most common logical fallacies in students' argumentative essays. For this purpose, the students wrote four different essays. For the first three essays, the students also wrote second drafts and, as a result, seven writings were analyzed in total. The results revealed that, of the 16 types of fallacies targeted in the current study, hasty generalization, irrelevant conclusion, red herring, oversimplification, begging the question, and hypothesis contrary to fact were the most common logical fallacies in students' essays respectively. Some other types of logical fallacies such as bandwagon, appeal to authority, straw man, false analogy, and false cause were found to be quite rare in the writings. The findings also showed that in different tasks, hasty generalization, irrelevant conclusion, and red herring were observed as the most common types, which could mean that the frequency of a specific type of fallacy could be influenced by different factors including the writing prompt or attitudes towards the topic of the essay. It was also seen that some types of fallacies were not found in the 1st drafts or the 2nd drafts at all as time passed. Therefore, it can be concluded that students may have a tendency to commit certain types of logical fallacies more than the others.

The second question aimed to discover whether teacher corrective feedback contributed to reducing logical fallacies in student essays. With respect to the statistical tests employed using SPSS-22, it is obvious that teacher corrective feedback contributes to reducing logical fallacies in students' essays. In the 1st writing task, while the average error number was 12.26 in the 1st draft, it decreased to 3.77 in the 2nd draft after receiving feedback. In the 2nd writing task, the average error number dropped to 2.44 from 7.49. In the 3rd writing task, the average error number was 1.37 in the 2nd writing task while it was 3.81 in their 1st attempt. There was a statistically significant difference between pre-feedback and post feedback measurements of errors: task 1 ($t = 14.69$; $p < .05$), task 2 ($t = 10.83$; $p < .05$), task 3 ($t = 8.39$; $p < .05$). It can also be concluded that the average number of errors decreased in the 1st drafts of the writing tasks over time. Yet, the decrease in the number of errors was more considerable in the 2nd drafts after receiving feedback. Another conclusion is that though a continuous decrease was observed from the 1st writing to the 3rd one, there was no statistically significant difference between the number of errors in Tasks 3 and 4. This may show that when students get feedback on the logical fallacies in their essays several times, the number of errors decreases over time. Even if the errors may not be eliminated completely, the number of them becomes quite low and the learners may continue to have few mistakes.

With the third research question, the current study attempted to find out the students' perceptions about the effect of teacher written corrective feedback they received on the logical fallacies in their essays. The participants in the study had never had such an intensive focus on logical fallacies in their written production. The results of the individual interviews indicate the learners were pleased that there was a specific focus on logical fallacies and they were highlighted in their essays to give them the chance to better the quality of their arguments. The learners elucidated their views about the benefits of the treatment by referring to gaining awareness about logical fallacies, improving the quality of writing, noticing and identifying fallacies through guidance, improving critical thinking skills, and benefits in other areas. Out of 13 learners, only two of them had a negative approach towards the treatment and mentioned that trying to avoid logical fallacies was restrictive, disturbing the unity of the text, and making the writing process more complicated. Additionally, most of the learners shared positive views about coded feedback that was utilized to highlight the fallacious claims in the essays. While it was mentioned that coded feedback was practical and the codes were both more memorable and easier to understand, a preference for seeing the feedback written in the margins for some types of fallacies and only checking the errors

underlined were mentioned as the drawbacks. Regarding the materials used in the treatment process, most of the learners shared positive views. They especially liked the Teaching Guide since they found it practical and informative. The students also liked the sentence analysis activity which had a collation of the fallacious claims in their own essays. Consequently, a significant conclusion of the study is that a variety of materials could be utilized while teaching and practicing logical fallacies.

5.2. Implications

Writing skill is one of the most challenging aspects of L2 learning process for most of the learners. Things may get even more complicated and harder when learners are expected to write in a more academic manner following the conventions of academic writing. In freer compositions where the learners share their personal experiences and views, logical fallacies may be a less significant concern since the content is formed based on the individual learner's perspectives as expected by the writing prompt. Yet, when the learners write academic texts in which they are supposed to convince the reader, it becomes more probable that they commit logical fallacies while they are trying to persuade the reader to support and believe in their claims. In this study, logical fallacies that can frequently be found in the EFL learners' argumentative essays were targeted and depending on the findings, the following implications can be drawn.

Initially, the current study clearly demonstrates that there is a need to focus on logical fallacies explicitly in writing classes. Most of the learners in this study were unfamiliar with logical fallacies prior to the lesson in which they were introduced to the concept of logical fallacies. This may, therefore, imply that they had not thought about the quality of their arguments in terms of their soundness before this study, which is a conclusion supported by the responses of some learners who were interviewed. Given the significant contribution of writing in a fallacy-free manner to proposing arguments in a valid and sound way, it may be considered as a serious weakness not to be familiar with logical fallacies for tertiary level EFL learners, who regularly write academic papers as assignments. Additionally, considering the fact that some of these students are prospective academicians, the significance of teaching and raising awareness about logical fallacies becomes more evident. Consequently, the principal theoretical implication of this study is that writing teachers must integrate logical fallacies into their daily teaching.

The role of schools and universities is also worth mentioning in terms of raising awareness about logical fallacies. It would not be wise to expect university students to suddenly start paying attention to logical fallacies in their essays when they have been unaware of them in their previous educational experiences. One of the challenges faced in the present study was the unwelcoming attitude of some of the learners towards logical fallacies. They were reluctant to adopt them and propose their arguments in a more logical way accordingly especially at the beginning of the study. The reason was that all of a sudden they were informed that their thinking could be fallacious when they offered certain claims. Some of them felt that this was a threat to their identity as a writer since they had never been warned about such claims they made in their previous writings. Understandably, they were comparing their new learning experience with the old one and wondering why such claims were ignored and not highlighted by their writing teachers in their previous education. To this end, in writing classes, starting at early levels, writing teachers can do some activities to raise students' awareness about logical fallacies. Even if it may not be possible to give feedback to each fallacious claim of the learners, some explicit focus could be placed on the most common ones in their writings and those can be highlighted regularly to raise students' awareness. For a more standard approach, the schools and the universities can integrate the teaching and practicing of logical fallacies into their curriculum. In this way, critical thinking skills of the learners can also be fostered, which is one of the most needed skills for the learners in the 21st century.

Critical thinking skills are needed for the learners in almost all the aspects of their lives. In the changing, digital world, they are surrounded by a wealth of information and exposed to all sorts of unfiltered information coming from outside. To be able to tackle this situation, they must have the ability to evaluate the received information and make their decisions to believe in it or not accordingly. When the way information is conveyed to the audience is considered, there is usually an attempt to make the reader or the listener support and believe in what has been shared. While trying to achieve this objective, it is also probable for the source of the information to commit logical fallacies knowingly or unknowingly. The learners in the modern society, especially young learners and young adults, need to possess the knowledge of such tactics, namely logical fallacies, that may be used to convince the target audience on purpose. Given that one of the main purposes of education is to equip students with the skills to cope with the challenges posed by real life, teaching and raising

awareness about logical fallacies that they could be exposed to while trying to be persuaded to support someone's claims would be a very useful real-life strategy for them.

In this study, the logical fallacies that were identified in the writings of the students were targeted and there was no specific focus on the other skills, namely speaking, reading, and listening. Yet, as one can predict, logical fallacies could also be found in someone's speech, in a well-written article that students read, or in a video they listen to on the Internet or on television. Since there is a possibility of being exposed to fallacious claims in both written and oral materials, logical fallacies had better be taught with a more general perspective rather than merely focusing on learners' own errors in their writings. Due to time constraints, there were no chances to analyze the logical fallacies that were found in a spoken production or a written source in the present study. Yet, though this was not openly targeted, some of the learners were able to transfer their knowledge of logical fallacies to different settings and started to be more aware of the language used around them, on television, in the videos they watch, and in the written texts they read. To increase the learners' awareness about logical fallacies, a variety of activities could be planned by EFL teachers including analyzing the speech of a presenter, a video shared on Youtube, or a reading text that is covered in their main books in addition to focusing on the fallacious claims in their own sentences. In this way, learners can better understand that they could be exposed to logical fallacies that result from erroneous thinking in many different settings and ways.

Another implication drawn by the current study was related to the use of coded feedback. For a majority of EFL teachers, writing notes in the margins or on the paper is usually the preferred way of giving feedback. Yet, at the end of the feedback process, they may usually come to realize that they have written the same sentences and notes over and over again both on the same student's paper and on different students' papers. In the end, this may be frustrating for the teachers making them think that they have repeated themselves and spent unnecessary effort. The learners may also be easily discouraged by seeing repetitive and long comments. The potentially long feedback may even make learners think that the feedback that they received from their teacher tends to be longer than what they have actually written. This was a comment the researcher heard many times both from her own students and her colleagues talking about their own students' reactions. Though there is obviously a little bit of an exaggeration, it has certain implications about how the students feel when they see a lot of feedback on their papers. Such feedback clearly tends to be demotivating and discouraging for most learners.

Coded feedback may come into stage at this point. Rather than writing the same feedback over and over again, teachers may prepare a feedback rubric by compiling the sentences and notes they use frequently. Using this feedback rubric, rather than writing the same sentence several times, they can simply write the code on students' papers and direct them to the relevant explanation in the feedback rubric. This way of giving feedback could have a variety of benefits both for the teachers and the learners. Initially, teachers can save time and feel less overwhelmed by the task of giving feedback to students' writings. Additionally, teacher feedback could be clearer and more explanatory. Teachers can allocate the time they would normally spend on writing those repetitive comments to formulating detailed and understandable explanations for the codes used. One benefit for the learners would be to feel less frustrated by teacher feedback they see all over their papers. Rather than trying to make sense of the explanations they see on their writings, they can simply refer to the feedback rubric to comprehend what the problem is and what must be done to correct it. Seeing their paper less crowded by teacher feedback could be less threatening, less demotivating, and more encouraging on the side of the learners. In the feedback rubric, teachers can also include a section for giving tips as to how to fix the mistakes or errors identified in students' written work. Considering the challenges involved in writing skill, it could be valid to claim that learners usually need the guidance of their teachers especially while they are first learning a new genre or struggling with certain aspects of their writing. Teachers can offer certain overall suggestions to fix the errors and then encourage them to be more creative to discover more strategies to produce better arguments and sentences.

5.3. Suggestions for Further Research

In this study, there was a very specific focus regarding logical fallacies which was to highlight them in the essays of the learners for them to fix those errors to produce more sound arguments. Due to time constraints, it was not possible to approach fallacies from other perspectives. Yet, based on what is inferred from the limitations of the study, some suggestions could be offered for the future studies. Initially, the ability of the learners to diagnose logical fallacies in their own speaking, in the speeches they listen to, and in the written sources could be researched. To this end, learners could be asked to identify logical fallacies in a variety of materials and the prospective researcher could look into if the fallacies were correctly identified or not as well as checking whether some types of fallacies were any easier or harder to identify for the learners.

In the present study, a pre-experimental design was adopted and there was only the experimental group whose pre-test and post-test results were compared to see the effects of the treatment. The reason was that there was a possibility of losing some participants unexpectedly and ending up with a low number of students in either the experiment or the control group if a true experimental design was employed. In the future studies, a true experimental design can be applied to compare the results obtained from the experiment and control group. Furthermore, it would not be manageable to conduct the current study with more learners, so it was limited with 43 participants and only 13 learners were interviewed. The study could be repeated with more participants and a bigger number of learners could be interviewed.

Teacher corrective feedback was utilized to highlight the logical fallacies in the essays of the learners in this study. In the prospective studies, peer feedback could also be integrated in the treatment process. Researchers can look into whether learners can identify the fallacious claims in their peers' texts. Additionally, the number of fallacies that are highlighted by teacher feedback and peer feedback could be compared, especially with participants who have a higher level of language proficiency. The participants in the current study were studying in their own departments and taking a 4-hour mandatory English course; therefore, a limited amount of time could be allocated for the teaching and practice of logical fallacies not to fall behind the curriculum that needed to be followed. To gain a deeper insight, prospective studies could also be conducted with learners studying in high schools or in preparatory schools at universities by allocating more time for logical fallacies if possible.

As mentioned earlier, the study had to be conducted in a relatively short period of time due to time constraints and other course content that needed to be covered during the course. In the future studies, prospective researchers could plan a longer period of time for the treatment. Additionally, a delayed post-test could also be applied to see whether the students will continue to pay attention to avoiding logical fallacies in their claims after some time passes. If time and conditions allow, a longitudinal study could be conducted to observe the changes in how learners present their arguments in the long run. In this way, it could be possible to gain a far deeper insight into how an explicit instruction, focus, and feedback influence the quality of learners' claims in the course of time and draw more comprehensive conclusions.

In the current study, to attain results and findings, the number of logical fallacies that were found in each writing task and each draft was calculated and the relevant conclusions were drawn based on the numbers obtained. Due to the fact that a standard writing rubric had to be used to grade the learners' writings and since there was no special focus on logical fallacies in that rubric, the learners' essays were not assigned a specific grade in terms of logical fallacies. In the future studies, there could be a number of points specifically allocated for logical fallacies in the writing rubric and the grades learners receive across writing tasks could be compared to see if there is a meaningful difference in the quality of their arguments after receiving feedback.

Last but not least, further studies could be conducted with participants who are from different generations. In the current study, the participants were all from Generation Z. For some types of logical fallacies, the interpretations and approaches of people from different generations could vary as it was the case for a false analogy about technology in the first lesson in which the learners were introduced to logical fallacies. In this study, the features of the generation the learners belong to were not taken into consideration and they were not analyzed. A study could be conducted with participants who belong to different generations and whether they interpret fallacious claims similarly or differently could be observed and compared in detail. The prospective researchers can also try to understand whether certain types of logical fallacies are easier or harder to notice for any age group. If conclusive results are obtained, the relevant implications can be drawn in terms of teaching and practicing logical fallacies in accordance with the characteristics of the specific age group.

5.4. Uniqueness

This study offers some insight into understanding the fallacious claims that are found in the students' argumentative essays by following a different agenda compared to those that were previously conducted. In educational research studies conducted on logical fallacies, studies were mostly carried out to encourage students to identify logical fallacies, and to understand and evaluate arguments. Regarding the field of ELT, the available studies which targeted logical fallacies in the literature also mostly aimed at identifying and describing the logical fallacies that existed in students' written production. Yet, no studies concentrated on reducing logical fallacies through corrective feedback by following a process writing approach according to the researcher's knowledge and as far as the extensive literature review conducted by the researcher is concerned. In the current study, the purpose was not

only to identify the most common types of logical fallacies, but also to reduce the logical fallacies identified by highlighting them through coded corrective feedback, which enabled the learners to correct their fallacious claims and produce more sound arguments. To this end, several writing tasks were utilized to observe the development of the learners over time. In this regard, this study offers valuable insights into whether the fallacious claims of the students could be reduced by giving teacher corrective feedback. Furthermore, thanks to the intensive individual interviews held once the treatment was over, deeper insights into the phenomenon were obtained based on the learners' responses, which can contribute to our knowledge of the learners' attitudes towards focusing on logical fallacies explicitly. Additionally, since coded feedback was utilized throughout the study, the reflections of the learners in terms of this method of feedback can add to our understanding of its benefits and drawbacks.



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APPENDICES



Appendix 1. Informed Consent Form

INFORMED CONSENT FORM

This study is conducted by Melek Altun, who is an instructor at Modern Languages Department at METU. The aim of this study is to collect data about logical fallacies that are found in the participants' essays. The data will be gathered from your essays and the responses given to the interview questions by the volunteer interviewees at the end of the process. In this study, your participation is on a voluntary basis.

No personal identification is required in the data collection process and participants' names will be kept in confidence. The data obtained from the essays and the interviews will be used only for scientific purposes. There are no potentially disturbing aspects of the study; yet, if you wish, you can leave the study when you feel uncomfortable or overwhelmed. In that case, you can simply contact the researcher about your desire to leave the study.

Thank you in advance for your participation in the study. For obtaining further information about the study or the results, you can contact Melek Altun from Modern Languages Department (E-mail: maltun@metu.edu.tr).

The Researcher's Name & Surname:

Melek ALTUN

I read the information above carefully. I am participating voluntarily in this study, and I am completely aware that I can leave the study at any point I want. I also give my consent for the use of the information I provide for this study.

The Participant's Name & Surname:

Date:

Signature:

Appendix 2. Preliminary Draft of the Teaching Guide

Commonly Observed Logical Fallacies in Students' Written Production

Type of Fallacy	Explanation	Example
Hasty generalization	Drawing conclusions too quickly or too generally based on insufficient evidence	Everybody in the world knows that education is a must to be successful.
Begging the question	Restating the claim with different words without supporting it	Effective leaders have good communication skills as they can speak well.
Oversimplification	Assuming there is a single cause/solution/way of an outcome when there are other possibilities	Global warming is caused by the use of individual cars instead of mass transport.
Missing the point	Reaching a conclusion that is not supported by the premises of an argument, or having a gap in the chain of reasons	Genetically modified foods must be banned because they are unnatural.
Slippery slope	Claiming that one event will trigger a chain of events	Using animals in tests will make us inhumane, increase violent acts and bring the end of civilization if we do not stop it.
Appeal to pity	Drawing a conclusion based on emotion and sympathy rather than fact	If we do not accept immigrants, how are they going to survive?
False dilemma	Simplifying an issue to only two solutions, options, possibilities etc.	Deforestation can be prevented either by punishing the citizens or planting more trees.
Red herring	Drawing the attention of the reader to an irrelevant issue - dodging the real issue, usually lacking explanations	Social media is useful for the teenagers, but the violent video games affect their psychology negatively.
Bandwagon	Accepting an idea or practice as true as everyone believes in it or it is popular	Immigrants should not be allowed to enter the country as many people think so.

Appendix 3. Teaching Guide Used in the Pilot Study

Code	Type of Fallacy	Explanation	Example
F1	Hasty generalization	Drawing conclusions too quickly or too generally based on insufficient evidence, a small sample or personal examples as well as personal experiences	Everybody in the world knows that education is a must to be successful. This is a good school because my cousin studies there and he says so.
F2	Begging the question	Restating the claim with different words without supporting it	Effective leaders have good communication skills as they can speak well.
F3	Oversimplification	Assuming there is a single cause/solution/way of an outcome when there are other possibilities	Global warming is caused by the use of individual cars instead of mass transport.
F4	False analogy	Assuming that because two things are alike in some ways, they are alike in all respects	Banning guns is like banning the use of cars since accidents kill many people.
F5	Missing the point (Irrelevant conclusion) (Does not follow) (Non sequitur)	Reaching a conclusion that is not supported by the premises of an argument, or having a gap in the chain of reasons, which causes the flow of the ideas to be disturbed and not well-connected to the claim	Genetically modified foods must be banned because they are unnatural.
F6	Slippery slope	Claiming that one event will trigger a chain of events	Using animals in tests will make us inhumane, increase violent acts and bring the end of civilization if we do not stop it.
F7	Straw man	Oversimplifying an opponent's argument to make it easy to refute	People who don't support the proposed minimum wage increase hate the poor.
F8	False dilemma	Simplifying an issue to only two solutions, options, possibilities etc.	Deforestation can be prevented either by punishing the citizens or planting more trees.
F9	Appeal to pity	Drawing a conclusion based on emotion and sympathy rather than fact	If we do not accept immigrants, how are they going to survive?
F10	False cause	Assuming that one event caused another due to occurring one after another	Immigrants are responsible for the economic crisis as it started after they came.
F11	Red herring	Drawing the attention of the reader to an irrelevant issue - dodging the real issue, usually lacking explanations	Social media is useful for the teenagers, but the violent video games affect their psychology negatively.
F12	Bandwagon	Accepting an idea or practice as true as everyone believes in it or it is popular	Immigrants should not be allowed to enter the country as many people think so.
F13	Appeal to authority	Using famous people to testify on issues in which these people are not experts	Many important people, including movie stars, say a healthy diet can help lose weight.
F14	Ad hominem	Attacking the character of the person rather than his/her ideas and arguments	He is a dishonest man who cheated on his wife. Why should the readers trust his ideas?

Appendix 4. Individual Interview Questions Used in the Pilot Study

1. Did you know about logical fallacies before this class?
2. Do you think you made fallacious claims in your writing before this class because you were not very familiar with logical fallacies? If yes, how do you think this affected the content of your text?
3. Have you ever got feedback specifically on logical fallacies in your writing before this class? For which aspects of your writing the feedback you got was more common?
4. Do you think an explicit focus on logical fallacies was useful? If yes, how did it contribute to your writing? Have you observed any changes in your way of thinking?
5. How do you think the instructor must focus on logical fallacies?
6. Do you think the process approach followed in writing assessments helped increase the quality of your essays in terms of logical fallacies?
7. Was it easy for you to detect logical fallacies in a given text before this class?
8. Do you feel that you can now identify logical fallacies in a given text?
9. Do you think you are now more aware of logical fallacies in your own writing? Do you pay attention to avoiding making fallacious claims?
10. Do you think you approach the information you find in a source in a more critical way in terms of logical fallacies after this class?

Appendix 5. Teaching Guide Used in the Actual Study

Code	Type of Fallacy	Explanation	Example	How to Avoid?
F1	Hasty generalization	Drawing conclusions too quickly or too generally based on insufficient evidence, a small sample or personal examples as well as personal experiences	Everybody in the world knows that education is a must to be successful. This is a good school because my cousin studies there and he says so.	Avoid general words (all, no, every, always, etc.). Use hedging language (could, may, etc.). Do not depend on personal experiences of only yourself or several people. Refer to statistics and evidence.
F2	Begging the question	Restating the claim with different words without supporting it	Effective leaders have good communication skills as they can speak well.	Make sure the claim you make is not the same as the reason(s) you state.
F3	Oversimplification	Assuming there is a single cause/solution/way of an outcome when there are other possibilities	Global warming is caused by the use of individual cars instead of mass transport.	Consider other possible options that might be involved in the occurrence of an event. Do not limit it to one. Use hedging language.
F4	False analogy	Assuming that because two things are alike in some ways, they are alike in all respects	Banning guns is like banning the use of cars since accidents kill many people.	Make sure the comparison is valid, relevant, and equally important.
F5	Missing the point (Irrelevant conclusion) (Does not follow) (Non sequitur)	Reaching a conclusion that is not supported by the premises of an argument, or having a gap in the chain of reasons, which causes the flow of the ideas to be disturbed and not well-connected to the claim	Genetically modified foods must be banned because they are unnatural.	Do not miss the main point being discussed. Do not leap to a conclusion without mentioning every step. Do not list ideas and examples. Answer “why”, “how” questions. Use transition signals to show the connections between ideas.

F6	Slippery slope	Claiming that one event will trigger a chain of events	Using animals in tests will make us inhumane, increase violent acts and bring the end of civilization if we do not stop it.	Do not make a list of possible outcomes like a shopping list. Evaluate them separately by showing the connections and base them on evidence.
F7	Straw man	Oversimplifying an opponent's argument to make it easy to refute	People who don't support the proposed minimum wage increase hate the poor.	Mention the opponent's position accurately rather than interpreting and dishonestly attacking it.
F8	False dilemma	Simplifying an issue to only two solutions, options, possibilities etc.	Deforestation can be prevented either by punishing the citizens or planting more trees.	Consider other possible options or solutions and do not ignore them. Be careful with "otherwise" and "if...not" structures.
F9	Appeal to pity	Drawing a conclusion based on emotion and sympathy rather than fact	If we do not accept immigrants, how are they going to survive?	Base your ideas on fact or evidence rather than emotional aspects.
F10	False cause	Assuming that one event caused another due to occurring one after another	Immigrants are responsible for the economic crisis as it started after they came.	Consider the other possible reasons for an outcome rather than blaming the newly-occurred event.
F11	Red herring	Drawing the attention of the reader to an irrelevant issue - dodging the real issue, usually lacking explanations	Social media is useful for the teenagers, but the violent video games affect their psychology negatively.	Focus on the main issue that is being discussed and what the question asks for. Do not go off-topic. Simply get rid of the idea if necessary.
F12	Bandwagon	Accepting an idea or practice as true as everyone believes in it or it is popular	Immigrants should not be allowed to enter the country as many people think so.	Rely on fact and evidence rather than what people say. Popularity does not make a claim sound.
F13	Appeal to authority	Using famous people to testify on issues in which these people are not experts	Many important people, including movie stars, say a healthy diet can help lose weight.	Refer to people who are expert in their fields rather than celebrities or famous people.

F14	Ad hominem	Attacking the character of the person rather than his/her ideas and arguments	He is a dishonest man who cheated on his wife. Why should the readers trust his ideas?	Avoid describing or criticizing the personality of the person Focus on the arguments.
F15	Argument by emotive language	Substituting emotive language for true premises that support the conclusion	If we got rid of technology completely, it would be disastrous.	Use neutral and academic language instead of very powerful, personal, and emotive language
F16	Hypothesis contrary to fact	Formulating a hypothesis and refuting facts to believe solely in the unproven	If the gun had not been invented, we would not have wars today.	Avoid mentioning conclusions that are based on hypothesis. Instead, base your arguments on facts and evidence. Talk about possibility. Use hedging language rather than assertive language. Be careful with “if” structure.

Appendix 6. Sentence Analysis Activity

1. There are a lot of families who stop communicating at home and start playing games on their mobile phones instead. There are even clinics that help people to stop this addiction. **(red herring & irrelevant conclusion)**
2. Modern parents use technological devices as baby sitters for their children.
(hasty generalization)
3. Technology is part of our lives with its advantages and disadvantages. Nowadays, we should benefit from its advantages and try to avoid its disadvantages. It can be an important part of our lives, but it is not all our lives. **(begging the question)**
4. These days, the biggest issue between the young and old generations is whether we have become too dependent on technology. **(oversimplification)**
5. Doctors like Mike Jeff (DoctorMike on YouTube) give advice about how to avoid the virus.
(appeal to authority)
6. Many people claim smart phones made children more aggressive. This is a misconception led by the journalists, politicians, or anyone who desperately seeks attention. **(ad hominem)**
7. Technology has made man's life much easier. It allows man to live a longer and healthy life, a life of convenience. For example, Amazon is a company allowing the average human to buy whatever he desires from the comfort of the home. **(missing the point)**
8. Many diseases occur because of using technology a lot. **(oversimplification)**
9. Modern world is too dreadful to live alone, so we need to have friends. **(argument by emotive language)**
10. It divides people into two sides, some of them believe that technological devices have a negative effect on our lives, yet some people think that it increases the quality of our lives.
(false dilemma)
11. After the introduction of technology into our lives, so many wars happened. **(false cause)**
12. I believe technology has made our lives worse and there are many other people who think like me. **(bandwagon)**
13. Eliminating technology from our lives would be like cutting our arms. **(false analogy)**
14. If you do not put time limits on the children's technology use, they will not go out to spend time with their friends, become asocial and have psychological problems like depression.
(slippery slope)

Appendix 7. Controlled Practice Exercises

Evaluate the Argument in a Letter to the Editor

PART A: Your local newspaper has been publishing letters to the editor about the pros and cons of banning advertisements aimed at children. You are going to discuss one letter whose position is badly argued.

Read the “Dear Editor” letter. Make a note of the problems in the letter’s reasoning or use of evidence you identify. Finally, you’ll discuss the problems you identified as a group.

Dear Editor:

Advertising aimed at children under 12 should be allowed for several reasons. First, one family in my neighborhood sits down and watches television together every evening. The whole family learns a lot, which shows that advertising for children is always a good thing because it brings families together.

Second, children can’t remember commercials anyway, so they can’t be doing kids any harm. Finally, the arguments against advertising aren’t very effective. Think about it: the advertising industry spends billions of dollars a year on ads for children. They wouldn’t spend all that money if the ads weren’t doing some good. Let’s not hurt children by stopping a good thing.

If anyone doesn’t like children’s ads, the advertisers should just try to make them more interesting. The ads are allowed to be shown on TV, so they shouldn’t be banned.

PART B: Now you will judge whether claims about the issue can be supported with information from the articles that you have read. This will prepare you to use claims and evidence in your own essay. Then, discuss if there are any logical fallacies in the given claims.

Each argument consists of a **claim** followed by **evidence** (a quotation from one of the articles you read). Decide whether the evidence

- supports the claim
- weakens the claim
- neither supports nor weakens the claim

1) Claim: We should ban advertising to children because TV ads can cause terrible problems for kids.

Evidence: “There is no convincing proof that advertising affects children.”

2) Claim: We should ban advertising to children because advertisers may try to take advantage of children who don’t realize that commercials are trying to sell them something.

Evidence: According to research, “It is not until the age of about twelve that most children fully understand the purpose of advertising.”

- 3) **Claim:** We should ban advertising to children because parents need to protect their children from the pressure to buy things they don’t need.

Evidence: “A ban on advertising to kids would rob them of the skills to become well-informed consumers.”

- 4) **Claim:** We should ban advertising to children because children can easily remember ads and often beg their parents to buy products that are not good for them.

Evidence: Studies conducted by the American Psychological Association show that “children can recall the message and want the product” after watching only one commercial.

- 5) **Claim:** We should allow advertising to children because many ads are for harmless or even healthful products.

Evidence: A university researcher “has conducted four surveys for the European Commission.”

- 6) **Claim:** We should allow advertising to children because parents can always control which advertisements their children see.

Evidence: “Ads are reaching children through new media (the Internet, for example) and even in schools: companies sponsor educational materials and put product ads in students’ textbooks.”

- 7) **Claim:** We should allow advertising to children because discussing ads can be a learning experience.

Evidence: “Parents can help their children evaluate different kinds of items for sale.”

Adapted from Song, Y., Deane, P., & Fowles, M. (2017). *Examining students’ ability to critique arguments and exploring the implications for assessment and instruction* (Research Report RR-17-16). Princeton, NJ: Educational Testing Service.

Appendix 8. Forum Discussion Activity

Choose 2 fallacies and 2 topics. Then, write sentences which include the fallacies and the topics you choose. Write your sentences under the Forum discussion. Do not state the types of fallacies. One of your friends will look at the sentences and try to identify the fallacy and explain why the sentences are fallacious. As the last step, the person who wrote the sentences should check whether the identification and the explanation are correct.

An example:

You write: “Formal education is the most important factor to be successful in life.”

Your friend replies: The type of fallacy in this sentence is “oversimplification”. There are other ways to become successful in life such as working hard, luck, or coming up with a creative idea. Such alternatives are ignored and claiming that formal education is the most important one is a very subjective way of supporting the claim.

You write: The identification and the explanation are correct because in my sentence, the other options to become successful are overlooked and one option is shown as more important in a fallacious way.

Type of Logical Fallacy	Topics
Hasty generalization	Death penalty
Begging the question	Fashion
Oversimplification	Working moms
False analogy	Cell-phones
Missing the point	Education
Slippery slope	Alcohol use
Straw man	Advertisements
False dilemma	Immigration
Appeal to pity	Studying abroad
False cause	Globalization
Red herring	Working part-time
Bandwagon	Social media
Appeal to authority	Animal testing
Ad hominem	Unemployment
Argument by emotive language	School uniforms
Hypothesis contrary to fact	Smoking

Appendix 9. Sample Sentences and Explanations in the Forum Discussion

Studying abroad

S1: “Everybody believes that studying abroad is beneficial for university students.”

S2: The type of fallacy here is hasty generalization because there are also other people who do not believe this argument. To make this argument evidence such as statistics or explanations of authorities should be provided.

S3: I think the logical fallacy here is a hasty generalization because the phrase everybody believes suggests that this is a universal fact which it is not. To avoid this fallacy, one must use hedging language.

S1: Yes, the logical fallacy is hasty generalization in my sentence. You are both right.

School uniforms

S1: “Parents who don't want their children to wear a school uniform contribute to discrimination at schools.”

S2: I think logical fallacy in this sentence is a hasty generalization.

S3: I think that the logical fallacy here is straw man because parents who don't want their kids to wear school uniforms have not presented any argument that would imply that they contribute to discrimination at schools. There are other possible reasons for them to not support uniforms at school and something that they would never believe in or imply has been used here to belittle their argument.

S1: It's a straw man since I misrepresented an opponent's argument.

Alcohol use

S1: “Alcohol use increases crimes which are committed during the night time.”

S2: This seems like a false cause. Maybe this could be better by saying: "One of the reasons why the crime committed during night time increases is alcohol use."

S3: I think the logical fallacy here is a slippery slope because not enough evidence has been given to prove why alcohol use increases crimes at night. A better way to put this would be to say that alcohol usage may cause one to lose their mind, commit acts that they would not justify when they are sober, and might be one of the reasons for increasing crime at night.

S1: It is actually a false cause. For slippery slope, there must be a chain of events that are triggered by one event.

Immigration

S1: “More and more American citizens lose jobs due to immigrants in the country.”

S2: I think in this sentence oversimplification is shown as a logical fallacy. Immigrants not directly cause citizens to be unemployed, there are numerical other factors to be considered.

S1: Yes, I wrote the sentence in a way that it is oversimplification. Your explanation is also correct.

Advertisements

S1: “Intensive advertisement of a product may cause the customer to hate the product and the brand before s/he tries it.”

S2: The logical fallacy type is straw man. The argument is made something easy to refute by saying "hate". Rather than that, opponent's argument should be mentioned accurately.

S1: Thank you for commenting. You are right, I tried to show one simple cause cannot cause such intense feelings by exemplifying it with straw man.

Animal rights

S1: “Many people eat animals so people cannot claim that they are sensitive to animal rights.”

S2: I think the type of fallacy in this sentence is missing the point. I think a person who eats meat can be also sensitive to animal rights. Such people are ignored. The premise and conclusion are not well-connected.

S3: Our thoughts are parallel with friend. The type of logical fallacy in this sentence is missing the point. It misses the point and leads to an incorrect conclusion, since eating meat does not make people insensitive to animal rights.

S1: I can understand your approach, but I tried to show an example of straw man here because I attacked the opposing view by in a dishonest way.

Alcohol use

S1: “Alcohol usage is very popular among the young-adults since young people use it very frequently.”

S2: I think the type of fallacy in this sentence is "begging the question". 'Young people using alcohol very frequently' is the same as 'alcohol usage being popular among young adults'. Therefore, claims and reasons are the same. It can be fixed by changing the reason sentence with something that is not the same.

S1: Yes, the type of fallacy is begging the question.

Consumption

S1: “Environmental factors led people to consume more and quicker. This rapid increase may cause shortages.”

S2: I think there are two logical fallacies here, "false cause" and "oversimplification". It sounds like environmental factors are the only reasons why people consume more. (Oversimplification) Also, second sentence has a meaning that shortages are caused by only this consumption. (False cause).

S1: Thank you for commenting. You are right, oversimplification was the logical fallacy I am trying to show. However, I couldn't think of false cause. Thanks to you, I have noticed that sequence I have stated causes a logical fallacy.

S3: As she said "may cause", I don't think that this is the only outcome so there may not be false cause there.

Education

S1: “University education is the most important factor to find a good job.”

S2: I think your argument is based on insufficient evidence. Therefore, the type of fallacy is the hasty generalization.

S1: Actually, I want to show the example of oversimplification. I assume that the university education is the just a way which is the most important to find a good job. I limit it to just one way by using oversimplification. Also, I overlook other ways to find a good job. My explanation may not be clear. If you think so, you can look at the example which is given by our teacher in the document of type of logical fallacy. Because I wrote the sentence similar to the example. I hope I could explain. Thank you for the answer.

Animal testing

S1: “Animal testing should be banned because everybody thinks in that way.”

S2: It is not enough to support the author to think that all people think like this. It is the "missing the point".

S1: I wrote this sentence as an example of "bandwagon" but I think "missing the point" works too since the conclusion is not supported by a valid argument.

Education

S1: *"College education is an exaggerated concept. Even Marc Zuckerberg left Harvard."*

S2: I think logical fallacy in here is appeal to authority. Since Mark Zuckerberg is not an individual whose profession is college education.

S1: Yes, it is definitely correct.

Alcohol use

S1: *"If people stopped drinking alcohol, no one would get liver diseases, and car accidents would vanish."*

S2: You claim that the first event will trigger a chain of events. Thus, the type of fallacy is the slippery slope.

S1: You're right. Thank you. When I look at my sentence again, maybe it can also be hypothesis contrary to fact.

School uniforms

S1: *"Students in schools where there aren't restrictions on what to wear tend to be more envious of each other."*

S2: I guess this sentence has a false cause fallacy because it related a certain behavior from specific students and put it as a direct result to school uniforms without a clear evidence.

S1: Yes, your identification and explanation are correct.

Smoking

S1: *"Lung cancer occurs due to smoking."*

S2: That's an oversimplification, since there are several other reasons for the occurrence of lung cancer.

S3: This is an example of hasty generalization, lung cancer does not occur only due to someone's smoking addiction, there are many more factors.

S1: Actually, I wrote this sentence to show oversimplification. Smoking is not the only reason for lung cancer, but you are right, it is also hasty generalization.

Death penalty

S1: *"The death penalty is necessary like imprisonment since they are both ways of punishment for crimes."*

S2: This logical fallacy type is a false analogy. Yes, the death penalty and imprisonment are both ways of punishment but this similarity doesn't mean that they are both similar from all angles.

S1: You are definitely right.

Social media

S1: *"Social media should not cause any harm since all the celebrities are using it."*

S2: The logical fallacy here is "appeal to authority". You use celebrities to show that social media has no harm. There is no scientific evidence here so we can't conclude that social media has no harm.

S1: Thank you for commenting. Your explanations are correct.

Unemployment

S1: *"One of the reasons for the high unemployment rate is because people are lazy and they turn their noses up at job opportunities."*

S2: The fallacy in this sentence is hasty generalization. The writer's argument is too general and not based on sufficient evidence. To avoid this, hedging language and some statistics or evidence should be used.

S1: I think the type of fallacy and your explanation is right. Also, I am curious that can it be an 'Ad Hominem' since I mention people who are unemployed in a bad way rather than unemployment itself.

Alcohol use

S1: *"Just as politicians say, we should reduce alcohol use for a healthier life."*

S2: The type of fallacy in this sentence is "Appeal to authority". Since they are not experts on this topic, referring to politicians to support this argument and use their words as evidence would be wrong. Instead of politicians, people who are experts in this field should be cited.

S1: Yes, the type of fallacy and your explanation is true. Thanks!

Working part-time

S1: *"Students will get poor grades and fail in their academic life if they work part-time."*

S2: The logical fallacy type is hypothesis contrary to fact. The conclusion which is that students get poor grades and fail in their academic life if they work part-time job is reached too quickly. It shouldn't be the case that conclusions based on hypothesis. Statistics and explanations should be provided to make that claim.

S1: Actually, since I assumed that working part time will eventually cause poor grades without showing the connections, it's a slippery slope.

Alcohol use

S1: *"Drink water every day and be healthy, or continue to drink alcohol and be unhealthy. Those are the only options."*

S2: That's a false dilemma since these two are obviously not the only two options.

S1: Yes, it's definitely a false dilemma and your explanation is right too.

Working moms

S1: *"All people know that working and taking care of children at the same time is very difficult for mothers."*

S2: I think logical fallacy in this sentence is a hasty generalization. The writer reached conclusion too quickly and too generally.

S1: Yes, correct identification and explanation. Using hedging language, like "a majority people" or "many people" this fallacy could be prevented.

Cell-phones

S1: *"In public transportation, you can see all those people focused on their cell-phones and forget the world in front of them."*

S2: The type of fallacy in this sentence is "hasty generalization". There are others who do not focus on their cell-phones and forget the world. "All those people" phrase blames these people too which is not accurate. Hedging language should be used rather than general words to make this sentence right.

S1: The identification and the explanation are correct. Making a generalization wouldn't be logical. Instead of "you can see all those people", we could use "you may see some people". Thanks, man!

Social media

S1: *"People use social media to fill up spare time."*

S2: This has hasty generalization. With a simple "some" before people, this sentence can be a lot better.

S1: Yes, the identification and the explanation are correct. I made a general assumption about all people. However, there are people who use social media for other reasons. Therefore, as you said, I should have written 'some people'.

School uniforms

S1: *"Students should continue to wear school uniform since many parents and teachers think so."*

S2: I think the type of logical fallacy in this sentence is bandwagon because the sentence is based on the assumption that the opinion of the majority (many parents and teachers) is always valid.

S1: Yes, the type of logical fallacy and its explanation are correct. I assumed that the opinion is true since many people think so.

Smoking

S1: *"Smoking problem can be solved with either banning it or increasing the prices."*

S2: I think the type of logical fallacy in this sentence is false dilemma because two solutions are presented in this sentence. All the other solutions are ignored.

S1: You are right. I tried to show an example of "false dilemma" here by mentioning only two solutions.

Globalization

S1: *"As famous businessman Carlos Slim claims, globalization will help to establish an enduring world peace."*

S2: The type of fallacy in this sentence is "Appeal to authority". Instead of the businessman, people who are experts in this field should be cited.

S1: You are definitely right. Thanks!

Immigration

S1: *"After the increase in the immigration flow to Europe, Corona virus spread to every European country."*

S2: This looks like false cause, since there is an assumption of immigration causing the pandemic only because it happened before pandemic.

S1: Correct identification and explanations. It shows a false cause.

Immigration

S1: *"Too much immigration will cause overpopulation and economical collapses following with cold wars and boycotts due to economic conflicts."*

S2: I think the type of fallacy in this sentence is slippery slope since there is a chain of events having unclear connections and evidence.

S1: Yes, my sentence was an example of slippery slope as you said.

Intermittent fasting

S1: “Jennifer Lopez declared that she is applying intermittent fasting so this shows that intermittent fasting is a healthy diet.”

S2: In this sentence, the type of logical fallacy is appeal to authority. It is fallacious since Jennifer Lopez is not an expert in this field.

S1: Yes, I wrote the sentence to show an example for “appeal to authority”. As you said, experts should be cited instead of celebrities.

Social media

S1: “Bringing social media, technology damaged people's psychological states.”

S2: It is evident that there is a hasty generalization here, as the writer simply states social media without referring to any of its aspects, or going into detail about the kind of psychological damage.

S1: Actually, the dominant fallacy type here is false cause because there are also other possible reasons for making people's psychology worse. It shouldn't directly be said that technology caused this situation. Instead of this, like "one of the reasons for this... " could be said.

Unemployment

S1: “My neighbor claims that the unemployment rate will be 3.6% in 2021.”

S2: The type of fallacy here is appeal to authority. The argument given is not provided with the claims made by experts in this field. It should be referred to people who are experts in their fields.

S1: Your identification and explanation are correct. Thank you.

Smoking

S1: “What a lot of people don't understand is that smoking is therapeutic to many, allowing them to feel better after a long day, so why would we ban smoking?”

S2: I think logical fallacy in this sentence is missing the point (irrelevant conclusion). Because the writer reached a conclusion that is not supported by the premises of an argument, that is why ideas are not well-connected to claim.

S1: Actually, I tried to show “appeal to pity” and “fallacy by emotive language” here by using an emotional word “therapeutic” here. It is not an objective word.

Studying abroad

S1: “To refuse to study abroad is as if one was to refuse from stepping outside of their very home for the entirety of one's life.”

S2: For me, the fallacy in this sentence is “false analogy”. Two examples are not equal in all aspects. The home example sounds a bit exaggerated.

S1: That's correct. I should have mentioned an example which is equal to studying abroad.

Smoking

S1: “Let us not be among the fools who rejoice in damaging their own bodies by smoking and let us reject their arguments for they are cognitively incapable of comprehending the fact that smoking is injurious to health.”

S2: The type of fallacy in this sentence is ad hominem. You are attacking the personality of the person instead of mentioning the person's idea. This is not a reliable evidence.

S1: Yes, you are right. Here, I must mention the idea of the person.

Appendix 10. Self-evaluation Checklist

- Evaluate the first draft of your essay in terms of the logical fallacies. If you notice fallacious claims related to the given type, mark “YES”. If not, mark “NO”.
- Evaluate the second draft of your essay in terms of the logical fallacies.

1st Draft Do I have fallacious claims related to ...?	YES	NO	2nd Draft Have I have edited my fallacious claims related to ...?	YES	NO
hasty generalization					
begging the question					
oversimplification					
false analogy					
missing the point					
slippery slope					
straw man					
false dilemma					
appeal to pity					
false cause					
red herring					
bandwagon					
appeal to authority					
ad hominem					
emotive language					
hypothesis contrary to fact					

Appendix 11. A Sample Essay Written as Pre-test with WCF on It

Technology With It's Advantages	
The clash of young and old generations have been a part of human nature. These days, the biggest issue between them has been whether have we become too dependent on technology (especially young people) or should we integrate our lives with the newest technology even more? The aim of this essay is going to be investigating this question showing the advantages technology has brought onto the world and pointing out some misconceptions about technological devices effects on people.	Microsoft Office User F1 Microsoft Office User F3
To start with, it is true that technological devices have become very common in our lives. But this situation has brought a huge advantage with it, awareness among people. In today's world, knowledge can spread worldwide in seconds, any emergencies or call for help can be heard by hundreds of millions. As an example, the wildfires in the continent of Australia months ago was heard and helped by people around the whole world. As people became more aware, more money was collected, more help were sent out. Another example is the war going on between the whole world and the corona virus. Doctors like Mike Jeff (DoctorMike on Youtube) give out advice on how to avoid the virus and be more cautious against it. Any person with a smart phone access to internet can reach these information and have an idea about the steps he/she should take. Without this information network provided by the technological advancements, world would be a much more chaotic place and people would be much less aware of what is going on around them.	Microsoft Office User F1 Microsoft Office User F13 Microsoft Office User F16
Despite this, there are misconceptions about technological devices and effects on them. Many people claim with invention of smart phone and television, children have become more aggressive and violent. This is a misconception led by the journalists, politicians or anyone who desperately seeks attention. They believe that video games or television shows have an addictive effect on children and lead them to violence and aggression. Researchs have been done about this and it has been seen that children who have shown leniency to violence all have some parental, financial or psychological issues. Their situation is believed to be unrelated with their dependence on any kind of technological device. There is also another misconception, which supports that the radio frequencies that come out of many technological devices have negative effect on human brain. There is no evidence or statistical data that supports this claim, on the contrary scientists have proved that the human brain itself spreads out radio waves as well. As it can be seen, the dependency of people on technology don't have any negative effects.	Microsoft Office User F7 & F14 Microsoft Office User F1
To sum it up, the more common usage of technology and technological devices have brought its advantages such as the information network it provides and the awareness it brought onto people. Also many false information that were believed by huge chunks of people were disproven, such as technological devices having bad effect on human health. It was seen that people's dependency was indeed harmless. By expanding the areas technology can be used, world would become a much easier place to live in, people would try to be much more helpful, and their help would reach all around the globe.	Microsoft Office User F6 & F16

Appendix 12. The Improved Version of the Sample Essay in the Pre-test

Technology With Its Advantages	
As the world entered the 21st century, it seems like the world's population entered the era of technology. As we enter the digital age, one question appears to be asked more frequently: whether have we become too dependant on technology, or should we integrate our lives with the newest technology even more? The aim of this essay is going to be investigating this question and showing the advantages technology has brought onto the world and dealing with some proposed harmful effects of technological devices' on people.	Microsoft Office User F1 error fixed
To start with, it is true that technological devices have become very common in the daily lives of people, but it could be argued that this situation has been beneficial. In the current conditions of the world, knowledge can spread worldwide much faster than it could before. Towards the end of 2019 wildfires in the continent of Australia were becoming much more aggressive and damaging. In a considerably short amount of time the rest of the world became aware of this situation and Australia received help from hundreds of millions of people, governments, and organizations. Without the information network provided by the newest technology, these kinds of responses to emergencies could take much more time and effort. Another example that can be given is the use of technology in the world's ongoing struggle with the novel coronavirus (COVID-19). With the increasing rate of the virus's spread, a major part of the world started to take precautions but still many people seemed clueless or mislead on what to do. Many authorities gave out information on how to avoid the virus, or how to act if getting infected on social media platforms. On March 4th, 2020, Prof. Dr. Bahadır Ceylan, infectious diseases and clinical microbiology expert at Medipol Health Association, published a video on the internet, about the coronavirus and answered frequently asked questions. It could be argued that integrating our lives with technology has provided benefits such as faster spreading of information or calling out help on a major or minor scale. (The learner simply deleted the argument that included F16 fallacy in the 2nd draft.)	Microsoft Office User F1 error fixed
Despite this, there are some negative opinions put on forward by people who believe that the world has become too dependant on technology. One of these opinions is that with the increasing rate of technological devices, children start to become addicted to them and this proposed addiction tends them to be more aggressive and violent yet here are some expert opinions against these kinds of claims. In an article about this topic (Miller, n.d), Dr. David Anderson, a clinical psychologist and director of the Behavior Disorders Center at the Child Mind Institute, states that "More often than not, what I see are parents who are concerned about their teenager's behavior around screens use the word addiction when it doesn't really fit." (Miller, n.d, para. 8). He also adds that children do show angry behavior if they're required to stop, insist on more and more screen time, spend a lot of offline time thinking about how and when they will get back online. But these kinds of behaviors can be prompted by many pleasurable activities, and don't constitute an addiction. Suggested salivation for these claims of technology addiction is completely getting rid of technology. But when experts like Dr. Anderson claim addiction is not even the right word for this situation and such behaviors of children are not abnormal, it seems like cutting out technology from our lives is unnecessary.	Microsoft Office User F7 & F14 fallacies were fixed by referring to a qualified expert
To sum it up, it is true that technology has become a substantial part of human life. This progression of human life and technology integration has shown its advantages, but also claims such as we have become too addicted to technology and technological devices' were also made. One of these claims was shown not to be that concrete by an expert. With the look of how things are going on, it seems that technology and humanity will become even more intertwined and many more cases on both sides will be made.	Microsoft Office User F1 error fixed
To sum it up, it is true that technology has become a substantial part of human life. This progression of human life and technology integration has shown its advantages, but also claims such as we have become too addicted to technology and technological devices' were also made. One of these claims was shown not to be that concrete by an expert. With the look of how things are going on, it seems that technology and humanity will become even more intertwined and many more cases on both sides will be made.	Microsoft Office User F6 & F16 errors fixed

Appendix 13. A Sample Essay Written in Task 2 with WCF on It

Compulsory To Learn: English!

In today's world, English is one of the best skills that you can acquire for various reasons. It is the largest language if both native and non-native speakers are counted and this feature makes it a global language (Ethnologue, 2020). Also, it is widely used in the media industry, for example, an enormous amount of movies, TV Shows and songs are written in English. Also, it is used by 59.4% of all the websites whose content language is known (W3Techs, 2020). Moreover, multinational businesses use this language for communication which is why they employ people who know it. As a result, it is obvious that knowing English takes people forward and it should be taught in schools as a compulsory lesson to train children for getting all these advantages.

Some may argue that English should not be a compulsory lesson because there can be students who don't want to learn it or need it. They may believe it should be a student's or their parent's free choice. However, there is a question about this claim that how knowledgeable students or parents are about the importance of English. For example, a student's father might have a narrow view and think like his son does not need to learn a foreign language since it has no use in daily life for a civil servant or future farmer. He would probably choose another lesson and his child would not learn English. In this scenario, the kid is deprived of lots of advantages. He could have read **tons of books** or internet sources about farming that could make him a better farmer which he would not find in Turkish or he could be in a better place as a civil servant since foreign language is an important criterion today. This example is also true for students who do not want to take an English course just because they find it overwhelming. They do not think about future profits but decide by looking at current difficulties. Thus, English lectures should be compulsory. In this situation, **ignorant parents** cannot restrain their child's future from learning an important skill and **students who do not understand the returns of this course** can still have a chance to get these returns.

There are also some general reasons to give English lecture as a compulsory besides answers to opposing side. First, it is needed to adapt to the new world. We live in a world where everything is connected. Something happened in faraway affects other countries, somebody from an irrelevant place inspires others and everything becomes global. This globalization movement mostly revolves around one language which is English. Therefore, we need to know this global language to understand what happens around the globe and how it will affect our personal lives or country by following foreign sources that mostly use English. Second, it is needed for better employment. **Companies in the globalization era** look for people who understand its language, English. They interact with other companies in different countries and it brings the necessity of using one common language for communication. For this reason, they try to employ people who know English rather than dealing with translations all the time. In summary, these two reasons that I have mentioned are related to **anybody in a country**. That's why English is a necessary lecture that should not be up to free choice but compulsory.

All in all, English is not just a language but a valuable skill for creating more opportunities, broadening the perspective and connecting to other people. **Even though some people do not understand its importance**, people should learn it to gain these advantages. Therefore, schools should step in and make this lesson compulsory aiming to equip their students with this important ability for their better future.

Microsoft Office User
F1

Microsoft Office User
F14

Microsoft Office User
F14

Microsoft Office User
F1

Microsoft Office User
F1

Microsoft Office User
F14

Appendix 14. The Improved Version of the Sample Essay in Task 2

Compulsory To Learn: English!

In today's world, English is one of the best skills that you can acquire for various reasons. It is the largest language if both native and non-native speakers are counted and this feature makes it a global language (Ethnologue, 2020). Also, it is widely used in the media industry, for example, an enormous amount of movies, TV Shows and songs are written in English. Also, it is used by 59.4% of all the websites whose content language is known (W3Techs, 2020). Moreover, multinational businesses use this language for communication which is why they employ people who know it. As a result, it is obvious that knowing English takes people forward and it should be taught in schools as a compulsory lesson to train children for getting all these advantages.

Some may argue that English should not be a compulsory lesson because there can be students who don't want to learn it or need it. They may believe it should be a student's or their parent's free choice. However, there is a question about this claim that how knowledgeable students or parents are about the importance of English. For example, a student's father might have a narrow view and think like his son does not need to learn a foreign language since it has no use in daily life for a civil servant or future farmer. He would probably choose another lesson and his child would not learn English. In this scenario, the kid is deprived of lots of advantages. He could have read some books or internet sources about farming that could get tips about being a better farmer which he would not find in Turkish. He could be in a better place as a civil servant since a foreign language is an important criterion today. This example is also true for students who do not want to take an English course just because they find it overwhelming. They do not think about future profits but decide by looking at current difficulties. Thus, English lectures should be compulsory. In this situation, there will be no chance to restrain child's future from having an important skill and every student can have a chance to get these returns.

There are also some general reasons for giving English lecture as a compulsory that should be mentioned. First, it is needed to adapt to the new world. We live in a world where everything is connected. Something which is happened in faraway, affects other countries, somebody from an irrelevant place inspires others and everything becomes global. This globalization movement mostly revolves around one language which is English. Therefore, we need to know this global language to understand what happens around the globe and how affect our personal lives or country by following foreign sources that mostly use English. Second, it is needed for better employment. In the globalization era, most companies look for people who understand its language, English. They interact with other companies in different countries and it brings the necessity of using one common language for communication. For this reason, they try to employ people who know English rather than dealing with translations all the time. In summary, these two reasons that I have mentioned are related to nearly anybody in a country. That's why English is a necessary course that should not be up to free choice but compulsory.

All in all, English is not just a language but a valuable skill for creating more opportunities, broadening the perspective and connecting to other people. Even though there are some counter-arguments, this skill is needed for raising better students who can adapt to global world conditions. However, there may be students who do not understand the importance of this skill or there may be students who do not have the opportunity to learn it because of their special conditions. Therefore, schools should step in and make this lesson compulsory aiming to equip all their students with this important ability for their better future.

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A false-repair to
fix F14 error

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F14 error fixed

Appendix 15. A Sample Essay Written in Task 3 with WCF on It

In the 2000s, Internet revolutionized the way humans communicate and brought them closer than ever before with its lightning speed. However, this mighty feat was followed by a trend of people retorting to fake online identities. These fake online identities are gaining popularity for various reasons like self-expression, self-experimentation, and their ability to offer a safe space to users, but their potential as political propaganda tool and misleading product reviews or marketing are most common because of the huge monetary benefits offered and the immense funding employed.

Microsoft Office User
F10

Some of these fake identities are created by people to fulfill their psychosocial needs while others are run by members of organization serving purposes that exceed personal satisfaction. The authors of online identities believe that fake identities offer a way to project our desired image onto people in a more controlled manner; our facial expressions, gender, race, body language, and other similar features are not visible and any visible information is what we choose to share thereby, offering us better control. While some people are content with projecting a controlled image, others seek a completely new image to be able to experiment with a different self. This different version of themselves enables them to find newer perspectives and feel the joys and sorrows of this version which could be a different gender, race, or ethnicity etc. In a world riddled with dangers, fake identities also provide a place to seek solace and it is in these safe spaces that they take a break from reality. Furthermore, the authors of sockpuppets mention that people use fake identities as a tool to look like a someone else to gain access to a community in which their access is limited or non-existent like an aspiring medical student using a fake id to join an online group of doctors where medical matters are discussed. Since it is so easy to gain people's trust with a fake id that looks no different than a real person's id, people with ulterior motives also retort to them to promote and recommend commercial products and sometimes to provide fake reviews on them. According to Delwiche & Herring (2018) more than one third of internet reviews are fake. Governments and politicians are also aware of the benefits and utilize them to spread propaganda. They attack their opponents, channel political discourse in a favorable direction, and create a false sense of agreement. These fake ids are referred to as sock puppets controlled by individuals with malicious intent and an individual may possess more than one fake identity.

Microsoft Office User
F1 & F15

Microsoft Office User
F1

Microsoft Office User
F1

I think it is of paramount importance to realize that the biggest contributor to the number of fake identities might be the ones used for political propaganda. Politicians and authoritarian regimes have always been interested in controlling media; with traditional media, they did so with strong censorship. However, Internet has deprived them of the ability to censor everything, so they have turned to propaganda. I believe that the true objective of propaganda is to produce a pattern of public utterance where the first trace of an unorthodox thought reveals itself as a jarring dissonance. To do that they require many people with fake identities to produce enough noise i.e. propaganda posts to blur out opposition posts. Since the election of Obama. It became apparent that internet was the most effective form of media. Hamurdan (n.d.) claims that through his online campaign Obama gathered more than \$500 million from three million people. The huge audience on the internet makes it easier to spread information. Hamurdan (n.d.) also shows the power of social media by mentioning how Obama fought against rumors of him not being an American by saying that "Obama's team could easily fight against these rumors by publishing documents proving his citizenship on his web sites" (p.61). With the power of internet proven, I think that governments are more likely to employ thousands of ids for monetary benefits and power.

Microsoft Office User
F1

Microsoft Office User
F11

Microsoft Office User
F3

Microsoft Office User
F1

Another significant contributor to the exponentially increasing number are the identities utilized to write bogus reviews and market products. I believe that today's business world is spearheaded by digital marketing and the rising trend of online shopping forces companies to market online interactively. Sock puppets provide an easy way to gain people's trust and market or review products. Mr. Mackey was a CEO and prime example of using sock puppets. Martin (2007) says that Mr. Mackey posted on yahoo finance 1100 times during seven years to support his company's stock and mock competitors. This has huge monetary benefits. Martin (2007) also mentions that whole foods announced intentions for purchase of a smaller rival for \$565 million. This was after his fake posts that boosted his stock.

Microsoft Office User
F3

All in all, the reasons to create fake identities vary from personal to commercial to political. Some of the reasons are very innocent in nature while others are of malicious intent but when viewed numerically, I think that political propaganda and business promotion are more significant contributors to the rising number of fake ids since they need many fake ids while an individual self-experimenting or projecting fake image needs a couple of identities if not one. So we must focus our attention on politics and businesses and combat sock puppet usage there to reduce the rising number.

Appendix 16. The Improved Version of the Sample Essay in Task 3

In the 2000s, Internet revolutionized the way humans communicate and brought them closer than ever before with its lightning speed. However, in today's world, we see a trend of people retorting to fake online identities. These fake online identities are gaining popularity for various reasons like self-expression, self-experimentation, and their ability to offer a safe space to users, but their potential as political propaganda tool and misleading product reviews or marketing are most common because of the huge monetary benefits offered and the immense funding employed.	Microsoft Office User F10 error fixed
Some of these fake identities are created by people to fulfill their psychosocial needs while others are run by members of organization serving purposes that exceed personal satisfaction. Wood and Smith (2001) believe that fake identities offer a way to project our desired image onto people in a more controlled manner; our facial expressions, gender, race, body language, and other similar features are not visible and any visible information is what we choose to share thereby, offering us better control. While some people are content with projecting a controlled image, others seek a completely new image to be able to experiment with a different self. This different version of themselves enables them to find newer perspectives and feel the joys and sorrows of this version which could be a different gender, race, or ethnicity etc. Given that sharing one's identity online may have harmful repercussions, fake identities also provide a place to seek solace and it is in these safe spaces that they may take a break from reality.	Microsoft Office User F1 & F15 errors fixed Microsoft Office User F1 error fixed
Furthermore, Delwiche and Herring (2018) mention that people use fake identities as a tool to look like someone else to gain access to a community in which their access is limited or non-existent like a medical student using a fake id to join an online group of doctors where medical matters are discussed. Since it is so easy to gain people's trust with a fake id that looks no different than a real person's id, people with ulterior motives also retort to them to promote and recommend commercial products and sometimes to provide fake reviews on them. According to Delwiche & Herring (2018) more than one third of internet reviews are fake. Governments and politicians are also aware of the benefits and utilize them to spread propaganda. They attack their opponents, channel political discourse in a favorable direction, and create a false sense of agreement. These fake ids are referred to as sock puppets controlled by individuals with malicious intent and an individual may possess more than one fake identity.	Microsoft Office User F1 error untouched Microsoft Office User F1 error untouched
I think it is of paramount importance to realize that the biggest contributor to the number of fake identities might be the ones used for political propaganda. In my opinion, politicians and authoritarian regimes have always been interested in controlling media; with traditional media, they did so with strong censorship. However, Internet has deprived them of the ability to censor everything, so they have turned to propaganda. I believe that the true objective of propaganda is to produce a pattern of public utterance where the first trace of an unorthodox thought reveals itself as a jarring dissonance. To do that they require many people with fake identities to produce enough noise i.e. propaganda posts to blur out opposition posts. Since the election of Obama, it became apparent that internet was the most effective form of media. Hamurdan (n.d.) claims that through his online campaign Obama gathered more than \$500 million from three million people. The huge audience on the internet makes it easier to spread information. Hamurdan (n.d.) also shows the power of social media by mentioning how Obama fought against rumors of him not being an American by saying that "Obama's team could easily fight against these rumors by publishing documents proving his citizenship on his web sites" (p.61). With the power of internet proven, I think that governments are more likely to employ thousands of ids for monetary benefits and power.	Microsoft Office User F11 error untouched Microsoft Office User F3 error untouched Microsoft Office User F1 error untouched
Another significant contributor to the exponentially increasing number are the identities utilized to write bogus reviews and market products. I believe that today's business world is spearheaded by digital marketing and the rising trend of online shopping might be responsible for the increase in interactive online marketing. Sock puppets provide an easy way to gain people's trust and market or review products. Mr. Mackey was a CEO and prime example of using sock puppets. Martin (2007) says that Mr. Mackey posted on yahoo finance 1100 times during seven years to support his company's stock and mock competitors. This has huge monetary benefits. Martin (2007) also mentions that whole foods announced intentions for purchase of a smaller rival for \$565 million. This was after his fake posts that boosted his stock. This example shows that there are huge pecuniary benefits to falsifying identities to market products and I believe that the motivation to make more money is stronger than personal reasons and therefore forces people to create more false ids for this purpose.	Microsoft Office User F3 error fixed
All in all, the reasons to create fake identities vary from personal to commercial to political. Some of the reasons are very innocent in nature while others are of malicious intent but when viewed numerically, I think that political propaganda and business promotion are more significant contributors to the rising number of fake ids since they need many fake ids while an individual self-experimenting or projecting fake image needs a couple of identities if not one. So we must focus our attention on politics and businesses and combat sock puppet usage there to reduce the rising number.	

Appendix 17. A Sample Essay Written as Post-test

Have you ever wondered if the interests of humans are worth prioritizing over the interests of every other being on earth? If so, you are not alone. Scientists, philosophers, and other intellectuals alike have long pondered about it and various philosophies have emerged as a result. Ecocentrism is one of these philosophies, justified by ontological beliefs and ethics, which advocates a nature-centered system whereas anthropocentrism is the opposite and advocates a humancentric system that might be a result of a narrow perspective and lack of capability to reach an impartial conclusion.

Microsoft Office User
F14

Hayward (1997) believes that humans evolved to be superior in intellect in comparison to the rest of the beings and it makes them superior overall. He assumes and concludes from the rankings of beings made by ancient philosophers that more superior beings are meant to be served by lesser perfect beings, so it is justified for us to use them as we deem fit. His argument is given substance by him stating that human beings are the sole ones capable of linguistic communication and logical reasoning. Gray, Curry, and Whyte (2018) argue that while our relative intellectual superiority is undeniable, we are all a part of the same ecosystem and that destroys any concept of overall superiority. They claim that this should lead to us feeling empathy for others and a sense of humbleness that leads to a greater realization that any damage caused to nature by anthropocentric behaviors cannot be remediated since it is so intricate that it is beyond our level of cognitive comprehension.

Hayward (1997) then points out that morals and ethics stem from our cognitive capability and therefore, they are only applicable to us. Since we are the only species that partake in such ethical dilemmas, anthropocentrism is justified because other beings have no sense of morality or ethics. Gray et al. (2018) counter this argument by stating that even then we are not free from moral responsibility since every element of this world contributes towards the greater good of the universe. Since nature is fundamental for survival, it must be subjected to moral thoughts.

I believe that ecocentrism is a better approach for the future. Superior relative intellect does not make us infallible and we are still very susceptible to feelings like greed; humans have long utilized earth's resources for their benefit. Corporate competition in capitalist markets fuels this greed where concern over damage to nature is neglected. I have observed that social hierarchies are not established based on intellect. Intellectually superior people often find themselves taking orders from someone with more capital. Since our social hierarchies evolved from nature's hierarchies, how can we expect superior intellect to be a measure of placement on those hierarchies when we cannot make it applicable in even descendant social hierarchies. I believe it is a sign of great intellect to exhibit self-discipline. So, if our great intellect was to somehow place us on top of nature's hierarchy, it would be that same great intellect that would compel us to not to view the rest of elements of that hierarchy as mere resources and to consider their rights. Animals are indeed free from moral limitations, but it does not free us from our responsibility. The argument that it is meant for only humans because they possess the same sense of morality is flawed according to me because your morality would prevent you from viewing a criminal as labor resource even though he/she does not possess the same set of morality as you. Then why should we exclude only other species from the scale of morality?

Microsoft Office User
F1

Microsoft Office User
F1

Microsoft Office User
F11

Microsoft Office User
F5

All in all, it is required for us to use our intellect for the greater good of the universe and that can only happen if we consider all elements of the ecosystem to be equal since we are incapable of dominating it anyway due to our limited comprehension capability and the intricacy of the system.

Appendix 18. Sample Changes Made after Getting Feedback on Pre-test

Sample 1

Before feedback: The clash of young and old generations has been a part of human nature. (hasty generalization) These days, the biggest issue between them has been whether we have become too dependent on technology or should we integrate our lives with the newest technology even more? (oversimplification)

After feedback: As the world entered the 21st century, it seems like the world's population entered the era of technology. As we enter the digital age, one question appears to be asked more frequently. Whether have we become too dependent on technology, or should we integrate our lives with the newest technology even more?

Sample 2

Before feedback: Doctors like Mike Jeff (DoctorMike on Youtube) give out advice on how to avoid the virus and be more cautious against it. (appeal to authority)

After feedback: On March 4th, 2020, Prof. Dr. Bahadır Ceylan, infectious diseases and clinical microbiology expert at Medipol Health Association, published a video on the internet, about the coronavirus and answered frequently asked questions.

Sample 3

Before feedback: Without this information network provided by the technological advancements, world would be a much more chaotic place and people would be much less aware of what is going on around them. (hypothesis contrary to fact)

After feedback: It could be argued that integrating our lives with technology has provided benefits such as faster spreading of information or calling out help on a major or minor scale.

Sample 4

Before feedback: Many people claim with invention of smart phone and television, children have become more aggressive and violent. This is a misconception led by the journalists, politicians, or anyone who desperately seeks attention. (ad hominem & straw man)

After feedback: One of these opinions is that with the increasing rate of technological devices, children start to become addicted to them and this proposed addiction tends them to be more aggressive and violent yet there are some expert opinions against these kinds of claims. In an article about this topic (Miller, n.d), Dr. David Anderson, a clinical psychologist and director of the Behavior Disorders Center at the Child Mind Institute, states that "More often than not, what I see are parents who are concerned about their teenager's behavior around screens use the word addiction when it doesn't really fit." (Miller, n.d, para. 8).

Sample 5

Before feedback: As it can be seen, the dependency of people on technology doesn't have negative effects. (hasty generalization)

After feedback: But when experts like Dr. Anderson claim addiction is not even the right word for this situation and such behaviors of children are not abnormal, it seems like cutting out technology from our lives is unnecessary.

Sample 6

Before feedback: By expanding the areas technology can be used, world would become a much easier place to live in, people would try to be much more helpful, and their help would reach all around the globe. (slippery slope & hypothesis contrary to fact)

After feedback: With the look of how things are going on, technology and humanity could become even more intertwined and many more cases on both sides are going to be made.

Sample 7

Before feedback: Technology has complex consequences and impacts in our lives as it is complex itself. (begging the question)

After feedback: Technology has some aspects which has been proven useful for sure, but it did damage humanity in so many ways that it took time to heal, and worse part is that it is still damaging humanity.

Sample 8

Before feedback: Technology made wars. It means that not only technology cause wars, but also involved actively in them. Tanks, planes, bombs, machines are all crafts of technology and these things ended so many lives. (oversimplification & missing the point)

After feedback: Technology, to some extent, made wars. First, it was and is one of the reasons that some wars happened and is happening at the first place since oil is one of the most important factors in triggering countries. And oil was and is a significant fuel for any motor using vehicle, which implies that oil was and is still part of technology.

Sample 9

Before feedback: Technology causes global warming. (oversimplification) Harmful gases on automobiles, factories, houses and etc. caused thermal distress on the atmosphere. (false cause)

After feedback: Technology is actually one of the biggest reasons behind the global warming. Factories, vehicles with internal combustion engines, even houses contribute to global warming.

Sample 10

Before feedback: Everyday there is a new technology coming out and entering into our lives. Nowadays, we cannot even imagine a life without internet. (hasty generalization)

After feedback: New technologies and innovations are being developed regularly and entering straight into our lives. Nowadays, it is hard to live a life without using the benefits of the internet.

Sample 11

Before feedback: People of our modern era have healthier bodies with more dependent minds. The span of lifetime of humans is relatively long now, but compared to previous times, most of us don't give that much mental effort because we somehow reached and settled in our comfort zone. For instance, students are now more inclined to receive knowledge more than to create it. Even our jobs became more related to bureaucracy and routine. The only ones who actually innovate are who were assigned as innovators. Since the industrial revolution, people are confined to the systems. We have widely advanced medicine and longer opportunity to live, but we don't use it efficiently, in my opinion. (red herring)

After feedback: Technology users may have healthier body, but less active minds. Due to technology, some people have reached and settled in their comfort zone so that they do not give that much mental effort, compared to previous times. For instance, children don't rely on physical and outside activities

anymore. They prefer to watch a TV program or playing on their tablets, which makes them more of perceivers than creators. On a bigger scale, technological advances in work life made innovation a harder task than it was because systems became the number one priority.

Sample 12

Before feedback: Increasing usage of technological devices is a controversial issue. It divides people into two sides, some of them believe that technological devices have a negative effect on our lives, yet some people think that it increases the quality of our lives. (false dilemma)

After feedback: Increasing usage of technological devices is a controversial issue. Some people believe that technology has a negative effect on our lives. Nevertheless, some others think that it increases the quality of our lives.

Sample 13

Before feedback: However, technology isn't always good for children. There are disadvantages of technology on children like inappropriate content and affecting brain development. Internet has a variety of content on it and it includes nudity and bad language. Children can easily see pictures which are not suitable for their age. Thus, they may come across with the videos that have swear on it. (missing the point)

After feedback: In addition, there is a wide range of inappropriate content that young people can inadvertently be exposed to when they are using technology. These unhealthy contents include lousy language and nudity. Therefore, a young person may be affected psychologically by those materials in a negative way.

Sample 14

Before feedback: Therefore, many of us will not survive if we get rid of technology. (hypothesis contrary to fact)

After feedback: Therefore, I believe that most of the people would have trouble when they are performing their daily activities if we get rid of technology.

Sample 15

Before feedback: First of all, technology is something that focuses on making life easier and better for people. (hasty generalization & oversimplification)

After feedback: First of all, making life easier and better is one of the main purposes of technology.

Sample 16

Before feedback: Technology resembles a kind of desert. It gives the best moments of your lives at first bite, but if you eat too much of it, then you would get poisoned. (false analogy)

After feedback: Norwegian diplomat Christian Louis Lange (1921) made the statement "Technology is a useful servant but a dangerous master".

Sample 17

Before feedback: Technology has decreased the quality of the time spent with family and close friends. (oversimplification). People are now using social media for communicating such as WhatsApp and Instagram. Texting messages and putting emojis at the end of the sentences are done in a few seconds. (red herring) Conveying messages in this way, people lose the chance to make empathy and actually understand the others. For example, when people go to a restaurant with their family, they always

immediately start to look at their smart phones and like other posts on Instagram. (missing the point & hasty generalization)

After feedback: Most modern people generally prefer some applications such as WhatsApp and Facebook to communicate. Yet, this form of communication enables people to contact only through words and short sound recordings. Thus, mostly this does not make conveying emotions possible as they cannot see other's body language and facial expressions. However, face-to-face conversations are much more valuable than texting messages since it contributes to share more emotions, interact with others and so improve our relationships. Also, a great majority of people tend to use shortcuts such as "ur" instead of "your" while texting on social media which influences language integrity and grammar structure negatively.

Sample 18

Before feedback: While it is true that technology is addictive and has negative effects on us, to avoid use of technology to get rid of this dependence is as if one was to cut off his arm because technology is as necessary as a body part in today's competitive world where we need to utilize every advantage we have. (false analogy)

After feedback: While it is true that technology is addictive and has negative effects on us, to avoid the use of technology to get rid of this dependence means putting ourselves at a disadvantage which might prove to be very costly in today's competitive world where we need to utilize every advantage we have.

Sample 19

Before feedback: Let us not be among fools who seek to get rid of the only tool that has made life better (ad hominem & oversimplification) and let us urge ourselves and others to utilize technology fully in an effective way to shape the world we can only dream of without technology. (false dilemma)

After feedback: Let us not fall into the trap of criticizing it because of our lack of understanding and not reject a tool that could prove to be very useful in making life better and in shaping the world into the world of our dreams.

Sample 20

Before feedback: Apart from that, using card system for transportation provides them to access where they want to go, especially from home or dormitory to school. This is also provided to them by technology. They can use bus, subway, etc. by using just a card. (begging the question)

After feedback: Apart from that, using a card system for transportation provides them to access where they want to go especially from home, or dormitory to school by the buses. Also, in Ankara, these young people can see when buses come to their place and buses' routes by an application by the technology. With this, they might not catch the buses by knowing the time.

Appendix 19. The Number of Errors Made by Each Student in Pre-Test

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	TOTAL
P1	7	0	3	0	2	1	0	1	0	0	2	1	0	0	3	1	21
P2	3	0	3	1	1	0	1	1	0	0	0	0	0	3	0	0	13
P3	6	0	3	0	2	0	0	0	1	0	0	0	0	0	2	0	14
P4	4	1	4	0	2	1	0	0	0	0	4	0	0	0	0	0	16
P5	6	1	4	0	1	0	0	0	1	0	0	0	0	0	0	1	14
P6	5	0	3	0	0	0	0	0	0	0	3	0	0	0	5	1	17
P7	7	0	2	1	1	0	0	1	0	1	1	0	0	0	1	0	15
P8	3	2	1	0	1	0	0	0	0	0	1	0	0	0	0	0	8
P9	6	1	4	0	5	0	0	1	1	0	0	0	0	0	0	0	18
P10	4	1	5	0	2	0	0	0	0	1	2	0	0	0	0	0	15
P11	4	0	1	0	2	1	0	1	0	0	2	0	0	0	1	1	13
P12	7	0	2	1	1	1	0	0	0	0	0	0	0	0	0	1	13
P13	5	3	6	0	2	1	0	1	0	2	3	0	0	0	2	0	25
P14	3	0	0	0	1	0	0	0	0	0	0	0	0	0	3	1	8
P15	5	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	9
P16	8	0	1	1	1	0	0	0	0	0	4	0	0	0	0	1	16
P17	6	0	3	0	0	0	0	0	0	0	3	1	0	0	0	0	13
P18	4	0	0	0	2	0	0	0	0	0	3	0	0	0	1	1	11
P19	3	0	1	0	0	1	1	0	0	0	0	0	1	1	0	2	10
P20	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	4
	97	9	47	4	27	6	2	7	3	4	29	2	1	4	19	12	273

Appendix 20. The Number of Errors Made by Each Student in All Writings

	W1	W2	W3	W4	W5	W6	W7
P1	21	6	4	1	8	3	4
P2	13	5	10	3	10	2	5
P3	14	3	6	2	5	0	4
P4	16	5	10	5	10	5	4
P5	14	4	7	1	6	1	4
P6	17	5	9	3	4	1	7
P7	15	2	1	0	1	1	3
P8	8	4	8	3	5	3	4
P9	18	3	6	0	3	0	2
P10	15	6	6	1	8	2	5
P11	13	3	4	0	2	0	5
P12	13	4	4	0	2	0	2
P13	25	10	10	5	5	4	4
P14	8	2	5	1	1	0	1
P15	9	2	2	0	7	1	3
P16	16	5	2	0	5	2	1
P17	13	4	3	3	2	1	5
P18	11	7	12	5	11	5	3
P19	10	2	0	0	5	0	3
P20	4	2	8	3	4	0	1
	273	84	117	36	104	31	70

Appendix 21. Semi-structured Individual Interview Questions

1. Do you think an explicit focus on logical fallacies was useful?
2. Do you think the process approach followed in writing assessments helped increase the quality of your essays in terms of logical fallacies?
3. Do you think you have made progress in your writings in terms of logical fallacies from the beginning to the end of the process?
4. Do you think the document with explanations about logical fallacies is useful? What are your views about underlining the sentences with logical fallacies and using codes in the feedback given by the instructor?
5. Do you think you are now more aware of logical fallacies in your own writing? Do you pay attention to avoiding making fallacious claims?
6. Do you think you approach the information you find in a source in a more critical way in terms of logical fallacies after this class?
7. Do you have a quality that you think you developed at the end of this process?
8. Is there anything that you think you are still having difficulty at the end of this process?
9. What do you think about the learning and teaching materials used in this process?

Appendix 22. A Participant with a Positive Approach to the Treatment

1. Do you think an explicit focus on logical fallacies was useful?

In my opinion it was quite useful. Let me give an example. For instance, there was a fallacy called “ad hominem”. It was about saying something about someone’s personality and it meant we digressed from the idea. This is a logical fallacy not only in writing but also in real life. That’s why, when I learnt this fallacy, I also learnt this: “What’s important is not what the person is like but the ideas proposed by him/her and I need to oppose them.” Therefore, I regarded fallacies as something that I could come across in daily life, in a discussion, in many different situations rather than learning them just for the sake of this lesson. There were other fallacies that were useful for our daily lives, so it was quite useful to focus on them.

2. Do you think the process approach followed in writing assessments helped increase the quality of your essays in terms of logical fallacies?

When there is no process and we just give the end product, we take the writing back and say “Okay, this is wrong.” and simply put it aside. Yet, when it is a process-based writing, the writing comes back to me, I see my mistakes and understand why they are wrong. I understand why there is a logical fallacy and see how it changes when I fix it. When I see what I changes, I say to myself “Yes, the previous sentence was fallacious because of this. I fixed it and now it sounds like this.” and then send the second draft. In my opinion, it is better when it is process-based. Otherwise, I would say “Okay, I made mistakes. That’s all.”. That’s why, it is better when there is a process. For instance, we were explaining something in logical fallacies in the first draft superficially and by forgetting the background. Yet, in the second draft, we were setting up the context like spider webs. When we set up this context, it actually meant we were completing an idea. That’s why, having a process improved my writing. I felt the quality of my writing increased at least in terms of reason-result connections.

3. Do you think you have made progress in your writings in terms of logical fallacies from the beginning to the end of the process?

Yes, I do think so. I was always making the same mistakes in writing 1 & 2. They decreased after seeing them several times. I was writing something and then told myself “I made the same thing again.”. Then, I was trying to fix or change it. Or, I was writing something and then reading it. I was cleaning and fixing it by saying “I’m attacking the personality rather than the idea here.”. Therefore, I believe it was quite useful in terms of logical fallacies.

4. Do you think the document with explanations about logical fallacies is useful? What are your views about underlining the sentences with logical fallacies and using codes in the feedback given by the instructor?

In my opinion, the most useful part of that document was the codes. The codes made it easier for me to understand what I needed to do. Instead of continuously searching them, I could immediately check that document. Let’s take F5 as example. There is an example, an explanation, and a solution. I could find the mistake from that, fix it according to the feedback given and study from it. That’s why, that document was quite useful. Otherwise, for instance, if just the names of the fallacies were written in the document, I would have to search for them and maybe would not be completely sure about them. That paper guided me about how to fix my mistakes. I believe this way of giving feedback was good and also fast. It wasn’t complicated or confusing, either. Maybe, you could get into the details of the mistakes. For instance, you could give more details about why it is an F5 error, but actually most of the time this was not necessary because it was easily understood. You check F5, you understand what is your mistake, the type of the mistake is also written there, but maybe it could be more detailed. Yet, I wouldn’t say this for all the types. For instance, hasty generalization is easily understood because you can easily understand you’re generalizing when you look at the mistake, it could be more detailed about certain types, the ones for which I said “What have I done here?”. If the sentences were not underlined and you just said “There is this mistake here.”, it would be harder then, but I believe most probably the mistake could be found. Yet, I doubt if it would be more beneficial. People could give up because it is tedious, but it could also be useful since they found the mistake themselves.

5. Do you think you are now more aware of logical fallacies in your own writing? Do you pay attention to avoiding making fallacious claims?

Yes, that’s for sure. I notice it in my own writings when there is a fallacy. I see my mistakes and fix them without even needing the teaching document. That’s why, it was useful. I try to avoid. The first example I gave is the most memorable one for me. While writing, I was trying to keep the fact that I needed to write something about the

person's idea rather than the personality. Apart from that, I was trying to avoid offering arguments which are not well-supported. Therefore, I believe it was useful both for my writings and in real life. I planned my ideas in my mind before starting to write. I was in the discussion club when I was in preparatory school. They also looked at the reason-result connection before we offered something. I offer the result first, think about the reasons in my mind and then start to write so that I will not commit the fallacy of irrelevant conclusion. Or there is a question in the prompt. I focus on that question so that I won't go off-topic and stick to what's expected of the question. I take such precautions not to commit logical fallacies.

6. Do you think you approach the information you find in a source in a more critical way in terms of logical fallacies after this class?

It's possible to have such an approach about articles. One question is whether the writer has presented an idea considering reason-result connection and what the writer based the idea on. I mean, you want to see the context you see in your own writings in the articles, too. Yet, when you cannot, your trust in that source is running low. You can see the fallacies of the writer, so I can say that I have started to notice them in outside sources, as well.

7. Do you have a quality that you think you developed at the end of this process?

What I think I have developed most is simply not generalizing. I was always making that mistake. I used to make such sentences as "All the people do this. Everyone is like this.". At the end of this process, I realized that I started to change this and use a more tentative language.

8. Is there anything that you think you are still having difficulty at the end of this process?

I feel that you tend to have a politically correct discourse when you are trying not to commit logical fallacies in the articles. It's like "Nothing must happen to anyone.". You sometimes really think so, but cannot say it because it is a logical fallacy. In such situations, I stay in between a little bit by considering "I want to say this, but this is a fallacy. Should I say it or not?". This is what I have difficulty in while writing.

9. What do you think about the learning and teaching materials used in this process?

I didn't use the self-evaluation on paper. Yet, I was actually thinking in my mind by saying "I did this in the 1st draft. I did this in the 2nd draft and I shouldn't do this and this at the moment." I didn't use that sheet since it was hard to use by writing. For instance, when I start to write the 2nd draft, I concentrate on it completely. It feels challenging to use that sheet at the same time while writing. I want to start writing immediately. I already plan my ideas in my mind. That's why, I didn't want to use it. It's a bit because of laziness. If I had used it, I'm sure it would have been useful because I remember making the same mistake twice consecutively. I was trying to evaluate myself in my mind instead of using it, but I'm sure it would have been more useful on paper. The activity that involved our own sentences was quite useful. In the previous question, we talked about noticing logical fallacies in outside sources. It's relatively easier to find our own mistakes because we wrote it, but in that activity, we tried to find the problems in other people's writings and they were a bit difficult if I remember correctly. We had difficulty in finding them. It was also useful because of that and we had the chance to do practice. The forum discussion was beneficial in terms of strengthening the bond with our classmates and doing further practice. Our friends' mistakes resemble our own mistakes. We're all in the same class and taking the same course. When we see their mistakes, we can say "I shouldn't make these mistakes. Clearly, such mistakes can be made and I would also write in this way." and fix the mistakes. That's why, such an activity was quite beneficial.

Appendix 23. A Participant with a More Critical Approach to the Treatment

1. Do you think an explicit focus on logical fallacies was useful?

It could be useful. I don't think that no one wants to make logical fallacies or contradict with himself or herself. It was beneficial to focus on fallacies at some points, but I also believe that we sometimes focused too much on them. I sometimes felt that I couldn't write my writing. Yet, at some points, I thought 'Yes, if I didn't know fallacies, maybe I would write in a wrong way'. In my opinion, it is good that they exist, but I believe our main focus is not them. I had difficulty in the parts where I needed to speak generally. I sometimes felt as if I wasn't writing myself and was trying to merge others' ideas and trying to explain to someone or I was an unnecessary middle man who was trying to translate the same language. The reason is that I felt I was making logical fallacies when I presented my own idea. I felt like an unnecessary messenger.

2. Do you think the process approach followed in writing assessments helped increase the quality of your essays in terms of logical fallacies?

I believe the feedback cycle was really useful because you get the chance to see where there are mistakes in the 1st drafts. I'm sure many people started to write their essays on the very last day like me and they wrote once, read once, and then sent the essay. Of course, I also did like that. Yet, when one gets feedback or reads the teaching document about logical fallacies, s/he says 'OK, I can fix this. I can cut this. or I can add this.', the quality of the writing increases. That's why, I was more comfortable with the 1st drafts and knew that I was going to do better in the 2nd draft due to the nature of the process. It really helped me a lot and I was very pleased. I never felt that I was having difficulty including the last exam because once you get used to that cycle, you understand what to do.

3. Do you think you have made progress in your writings in terms of logical fallacies from the beginning to the end of the process?

Yes, I do. I believe it will most probably affect my future writings, too because we focused a lot on them and they stuck to my mind. I think about them while writing and speaking. It made me think while writing something. I sometimes said "Yes, this is a logical fallacy." or "How can I avoid this?". Because you first set up your thoughts in your mind and then write. I always thought about how to write more logically free of logical fallacies while writing even when was setting up my thoughts in my mind. It had such an effect.

4. Do you think the document with explanations about logical fallacies is useful? What are your views about underlining the sentences with logical fallacies and using codes in the feedback given by the instructor?

It was useful. It shortened our work. For example, when you wrote "F1" while giving feedback, I was able to learn what "F1" exactly meant and how I could fix it by checking the document. Example sentences were very useful for me. There were a lot of times when I said to myself "How might I have made this mistake?" and I looked at the example sentence. I believe this was quite beneficial. If we didn't have the document, most probably many people would check them on Google. They wouldn't understand fallacies and ask each other. If someone gave a wrong explanation, maybe the whole class would write their sentences based on a wrong explanation. The document was useful for my 1st drafts and enabled me to write more effectively in a shorter time. I give the main idea instead of thinking over how to embellish an idea while writing. After that, with the feedback, I thought over how to change the statement and have a more concise writing. Thus, the feedbacks were really useful and they increased the quality of my writings. It shortened my writing process. When you are panicked, not sure about what you have written or write for the exam purposes, I mean when you do not write for yourself, you read what you have written 2-3 times, but cannot fully understand it. Yet, when there is the feedback process, it is more comfortable. You get prepared as if you are not writing for the exam but for yourself and will present it later. You write and read it. Then, you read it once more when the feedback comes. You fix the mistakes with feedback and read one more time and it becomes a more complete process. That's why, I believe the feedbacks were useful. Additionally, when I could sometimes predict what the mistakes could be, I was thinking "I could get feedback about this part and if so, how can I fix the mistakes?" Feedback process was also beneficial for that purpose. For instance, I was sometimes not sure about "F1", but I left the mistake there on purpose thinking that I would get feedback anyway and I would be able to fix it.

5. Do you think you are now more aware of logical fallacies in your own writing? Do you pay attention to avoiding making fallacious claims?

Of course, I do because we used them a lot. And it is automatically reflected in your speech, too. I realized I committed most of these fallacies in my daily life, as well. I noticed I especially used bandwagon a lot. I liked the fact that such mistakes had a role in written production, too, but at the same time I felt I was restricted at some points. However, I'm sure they'll definitely be useful for my future writings. I can even think of delving into fallacies by critically approaching such as "Yes, this is called a logical fallacy, but I believe it is not because ...". It definitely affected me positively. I didn't think a lot over how to avoid these mistakes because I could easily deal with fallacies. I didn't think a lot about how I could avoid a fallacy. I usually thought I would get feedback and could make the changes after the feedback. I always behaved like this if I had to think over 5 minutes. I thought "Let me write it in this way. I'll get feedback anyway." Besides, there were 2-3 days before the feedback came and I could think of a solution in that process. That's why, I didn't try hard to avoid them. It was easy for me. Yet, I didn't intentionally make mistakes in my writings, either so that they would be seen. I usually had 4-5 errors in my 1st drafts. I was aware of some of them, but I couldn't think of a solution to get rid of it and I kept them. I was thinking that seeing something very small would spark an idea. I was thinking I would be able to fix the mistake somehow. Feedback was always useful for me in this process.

6. Do you think you approach the information you find in a source in a more critical way in terms of logical fallacies after this class?

I don't know if I'll criticize, but I'll definitely be aware. I believe I'll be aware because I'm aware while I'm writing myself. I'll definitely say "This writer has committed this fallacy." while reading. I don't know if I'll agree or not. It may depend on what kind of a fallacy the writer has committed or I can say this is called a fallacy, but it's actually a great piece of writing. Yet, I'll definitely be aware. My attitude towards the source depends on that moment. I can say I liked this writing in general. The fallacy here is not important for me." I'm not a person who believes in standards or criteria. What the writing is trying to explain and convey is important for me. I feel that I can already make my own criticism. For instance, if the writer is criticizing something too much or touch upon a nonsense point, I feel that I do not need to be aware of logical fallacies to understand this. I can think it myself. Therefore, it doesn't concern me if there are logical fallacies in a writing and even if it is full of fallacies as long as the message it's trying to convey and the points mentioned are correct. I read and suggest it.

7. Do you have a quality that you think you developed at the end of this process?

We're writing academic essays and no matter how I don't like it, there are some criteria. We have to meet those criteria. I'm not sure if I'll write academic essays in the future or how much I'll write, but if I write, I have a standard and a template. Of course, I'll benefit from logical fallacies and this will improve my writing skills. I believe its biggest contribution will be to how I write an academic essay.

8. Is there anything that you think you are still having difficulty at the end of this process?

There were definitely some parts that I didn't understand or disagreed. Yet, I never missed what the fallacy was trying to do. I never said "What is this nonsense!" because there was always a point, something that it was trying to achieve and I followed them. It wasn't difficult for me to follow, at all. When there were some parts I disagreed, I said to myself "We'll do it somehow." because even if you want to write your own essay, you'll get a grade and it will affect your transcript. No one will say "Your essay is actually quite good. You could have got a higher grade." In the future. That's why, I made the changes for the sake of a good grade at time. The biggest challenge for me was I contradicted myself.

9. What do you think about the learning and teaching materials used in this process?

The activity which composed of our own sentences was quite beneficial. In my opinion, it is good that we see each other's writings. We see that two very different essays can both be given good grades or two very different essays can have very different mistakes although their main point is the same. For instance, when I see someone's mistake, maybe I'm not making that mistake in that writing task, but I may make a similar mistake in a different task. That's why, it was very good to see each other's mistakes. It was also quite beneficial for me to see my own mistakes. Honestly, I had more mistakes than I had expected in that activity, but it was quite useful that I saw them. When I saw my mistakes, I thought "I must pay more attention to them and adapt to

logical fallacies quickly so that I can get good grades. I must write in the expected manner.” because what’s important is to write in the expected manner and build on it. I got quite pleased by having such an activity. I felt it was useful for me. When you are writing a sentence, you write it silently and sometimes you form it piece by piece. You write the first piece and then think about the second piece and you actually bring 2 different sentences together. It could sound logical while writing or reading inside, but you can understand that something is illogical when you read it aloud. You can understand why it is a logical fallacy. For instance, there was this sentence and I’m sure that friend didn’t write it by thinking so because it was so nonsense. He said “Wars have increased as a result of technology.” He tried to mean that if technology didn’t exist, there wouldn’t be wars. It sounds so when you read, but that wasn’t what the writer was trying to convey. That’s why, that activity was quite useful. We saw how nonsense one can write. I also had nonsense ideas such as the one about politicians because your mind moves away while writing. There is time limit, too. Therefore, I liked this activity a lot. It was quite useful. Yet, I couldn’t pay enough care to the forum discussion activity. It seemed like a very easy task to me. It felt like a procedural activity. I needed to do it to get a grade. I felt as if I had to prove that I was paying attention to this course. If we were to do that activity, I would do it, but it didn’t contribute to my English. I didn’t feel the need to reinforce this topic. That was the part which made me bored of fallacies. I was saying to myself “We already have a document. It’s enough and we can write our essays with it.” The main purpose of the document was to help us anyway. Instead of analyzing fallacies one by one, I had a more wholistic approach. That’s why, I didn’t find this activity useful. I didn’t use the self-evaluation sheet, either. I’m someone who usually writes his mistakes in his mind. I felt it was a waste of time because even if I used it, I could still make some mistakes. Yet, I could predict my mistakes and knew that I would fix them. Self-evaluation was commonly done in my high school, as well. “What do you think about yourself? or Have you improved yourself?” were some questions they used to ask. Yet, I have always thought this would be seen in my writing. The main thing that I’ll write is the essay. I believed that we needed to concentrate on the essay. That’s why, the self-evaluation sheet wasn’t useful for me. Was it useless or too unnecessary? I believe some people may need it. There might be some people who are introduced to logical fallacies or structured essays for the first time. Such people need to pass from such a process. Yet, since I had already passed from such processes before, I wanted to get closer to the end. I wanted to skip the steps in the middle and concentrate on the essay that we would write. That’s why, it wasn’t beneficial for me, but if I must say something general for everyone, saying that it was unnecessary would be a bit harsh. Some may need it. We were a crowded class. Some people’s level of English is quite good while some others’ level is lower. I’m sure there are some people who needed it or said “It was quite beneficial for me.” To respond to this question. Yet, if you ask my opinion, it wasn’t beneficial for me.

Appendix 24. Codes, Categories, and Themes of Individual Interviews

R=Responses, F=Frequency

QUESTION 1 – “Do you think an explicit focus on logical fallacies was useful?”

R	F	Codes	F	Categories	Themes
YES	11	Gaining awareness of the previously made fallacies in writing	3	Gaining awareness	Positive attitudes towards focusing explicitly on logical fallacies
		Helping write in a more academic manner	3	Improving the quality of writing	
		Producing better quality writings	3	Improving the quality of writing	
		Difficult to notice fallacies on our own as opposed to grammar mistakes	2	Needing guidance	
		Was previously unfamiliar with fallacies	2	Gaining awareness	
		Learned what kind of sentences lead to such mistakes in essays	1	Gaining awareness	
		Before, it was normal when we proposed fallacious claims in a different language	1	Usefulness	
		Keep logical fallacies in my mind while writing	2	Gaining awareness	
		Keep logical fallacies in my mind while speaking	1	Benefits in other areas	
		Useful in daily life, discussions, and in many other situations	2	Benefits in other areas	
		Gaining awareness	4	Gaining awareness	
		Fallacies were not be noticeable for us at first look	1	Needing guidance	
		Less logical fallacies over time	1	Improving the quality of writing	
		A fallacy free writing is the best way to convince someone	1	Improving the quality of writing	
		Can notice the mistakes in someone's writing	1	Gaining awareness	
		Making the writing richer	1	Improving the quality of writing	
NO	2	Focusing on fallacies disturb the wholeness and harmony of the essay	1	Negative perceptions due to disharmonizing the essay	Negative attitudes towards focusing explicitly on logical fallacies
		Makes the process harder and longer	1	Negative beliefs due to complicating the process	
		The teaching guide and coding make the student think the process is a complicated one	1	Negative beliefs about the teaching guide	
		Would just prefer to write the mistake in the margins rather than coding and the teaching guide	1	Negative beliefs about coded feedback	
		Too much focus	1	Negative belief about the treatment	
		Felt isolated from the writing as the writer, like an unnecessary middle man who simply conveys something	1	Negative belief about the treatment	
		Made the changes because I had to	1	Negative belief about the treatment	

QUESTION 2 – “Do you think the process approach followed in writing assessments helped increase the quality of your essays in terms of logical fallacies?”

R	F	Codes	F	Categories	Themes
YES	12	Gaining an awareness of commonly made self-mistakes thanks to writing a lot	1	Increasing awareness of the self-mistakes	Positive attitudes towards following the process approach
		Seeing & understanding mistakes more clearly after 1 st draft	6	Benefits of the teacher corrective feedback	
		Benefitting from the teaching guide to fix mistakes	1	Benefits of the teaching guide	
		Allowing for further improvement	6	Providing room for improvement	
		Seeing what changes when the mistake is corrected	1	Benefits of the teacher corrective feedback	
		Gaining the habit of thinking over fallacies to avoid them	2	Increasing awareness of the self-mistakes	
		Difficult to see one's own mistakes	5	Needing guidance	
		Correcting more mistakes after getting feedback	1	Benefits of the teacher corrective feedback	
		Self-concentration not to repeat the mistakes	1	Increasing awareness of the self-mistakes	
		Self-awareness not to repeat the mistakes	2	Increasing awareness of the self-mistakes	
		Improvement in terms of fallacies over time	3	Improving the quality of writing	
		One thinks his/her own writing is flawless	3	Needing guidance	
		Would be bad if the 1 st drafts were graded	2	Providing room for improvement	
		Can understand the mistakes after some time passes	2	Providing room for improvement	
		Not thinking if the reader would understand the explanations clearly in the earlier writings	1	Looking at one's sentences with a more critical eye	
		Feedbacks helped develop an approach to think about if the reader would understand the explanations	1	Looking at one's sentences with a more critical eye	
		Affected my way of thinking	1	Looking at one's sentences with a more critical eye	
		Gained confidence as a writer	3	Increasing awareness of the self-mistakes	
		Establishing context in the 2 nd draft	1	Providing room for improvement	
		Improving the quality of writing	4	Providing room for improvement	
		Informs as to what to be careful about in the coming writings	1	Benefits for the future writings	
		The teaching document makes the process systematic	3	Benefits of the teaching guide	
		Started to use a more formal language	1	Providing room for improvement	
		Good to have 3 writings to have practice	3	Providing room for improvement	
		Getting feedback from an educated eye helps me notice them	1	Needing guidance	
		Getting used to the feedback cycle lets us understand what to do in the future tasks	1	Benefits for the future writings	
NO	1	Less effort on the 1 st draft due to knowing that feedback will come anyway	3	Over-dependence on teacher corrective feedback	Negative attitudes towards following the process approach
		Would be better if feedback was also given on the unity between paragraphs in terms of logical transition	1	Negative beliefs about the feedback given	
		Feedback was mostly at sentence level	1	Negative beliefs about the feedback given	
		No need for the teaching guide despite being useful	1	Unnecessity of the teaching guide	

QUESTION 3 – “Do you think you have made progress in your writings in terms of logical fallacies from the beginning to the end of the process?”

R	F	Codes	F	Categories	Themes
YES	13	Higher grades in writing tasks	1	Positive beliefs about the treatment	Perceptions about the areas of improvement
		Contribution of writing a lot to the quality of the 1 st drafts	1	Positive beliefs about the treatment	
		Self-correction of mistakes	3	Improvement over time	
		Starting to use tentative language to avoid generalizations	4	Using tentative language	
		Less mistakes over time	4	Improvement over time	
		Decrease in the frequency of most common self-mistakes	3	Improvement over time	
		Improvement by understanding the importance of fallacies	2	Gaining awareness	
		Connecting the conclusion to the main points	4	Improvement over time	
		Fallacies helped with essay organization	2	Improvement over time	
		Learnt to write in a more concise and academic manner	2	Improvement over time	
		The tendency to stop and read the sentences for fallacies	1	Gaining awareness	
		Decrease in the frequency of basic types vs. difficult ones	2	Improvement over time	
		Filtering the thoughts in mind while putting them in words by paying attention to fallacies	1	Gaining awareness	
		Frequently made ones became more memorable in time	1	Improvement over time	

QUESTION 4 “Do you think the document with explanations about logical fallacies is useful?”

R	F	Codes	F	Categories	Themes
YES	12	Still keeping it for future studies	4	Positive beliefs	Positive attitudes towards the Teaching Guide
		Like a small capsule	1	Practicality	
		Using it for the assignments of other departmental courses	2	Usefulness	
		Getting a higher grade in departmental courses after using it	1	Positive beliefs	
		Help understand the expectations and the feedback given	2	Usefulness	
		Limited number of types	2	Positive beliefs	
		Abbreviations make understanding easier	2	Practicality	
		A guide that shows what to do	5	Usefulness	
		Enabling to work on one's own without asking others	4	Promoting autonomous learning	
		Practical	5	Practicality	
		Made it easier for us to fix our mistakes	1	Usefulness	
		Explanations: Understand what the fallacy is Gives us the solution Like a rubric of the feedback Eliminated misunderstandings that could result from individual search and learning Sometimes it was a bit hard to understand fallacies at first	2 1 1 1 1	Positive perceptions about the “explanations” part	
		Examples: Similarity to self-mistakes Would be abstract without them Clarified the explanations which I couldn't understand Help understand why a self-mistake might have been made Really useful to understand the fallacies	2 1 3 1 2	Positive perceptions about the “examples” part	
NO		Tips: A tool to see mistakes Wouldn't know how to fix mistakes in writing Helping make less mistakes More memorable than explanations while writing essays Target the most commonly made mistakes Instead of tips, learnt by making mistakes and practice	1 2 1 1 1 1 1	Positive perceptions about the “tips” part	

“What are your views about underlining the sentences with logical fallacies and using codes in the feedback given by the instructor?”

R	F	Codes	F	Categories	Themes
YES	11	Codes wouldn't be enough to understand where the mistake is	3	Positive perceptions about underlining	Positive attitudes towards underlining the fallacious parts in the writings and using coded feedback
		Would be hard to scan the whole text /sentence if not underlined	4	Positive perceptions about underlining	
		Directing to the specific mistake in the document	3	Positive perceptions about coded feedback	
		Clear feedback increases motivation	1	Positive perceptions about coded feedback	
		Fast	5	Practical	
		Clear feedback helps concentrate on the specific mistake	3	Positive perceptions about coded feedback	
		Feedback cycle improved my writing by encouraging me to read my work several times	1	Positive perceptions about the feedback cycle	
		Wouldn't notice the mistakes easily if feedback was overall	3	Positive perceptions about underlining	
		Time-saving	4	Practical	
		Sentences rather than codes: Wouldn't be aware that a specific mistake was repeated	1	Positive perceptions about coded feedback	
		Teacher sentences: Either do not understand or understand more simply and do not bother much	1	Positive perceptions about coded feedback	
		Revisited and read the teaching guide to understand what the problem was	2	Promoting autonomous learning	
		Codes were more memorable like math formulas	2	Positive perceptions about coded feedback	
		Feel that the essays are written better over time	1	Positive perceptions about coded feedback	
		Allowing for self-correction rather than deleting the sentence	1	Promoting autonomous learning	
		There would be a crowd of feedback without codes	1	Practical	
		Sometimes kept a sentence which might be fallacious to get feedback	2	Over-dependence on teacher feedback	
NO	2	Only checked the mistakes which were underlined and did not check the rest for coherence	1	Negative perceptions about coded feedback	Positive attitudes towards underlining the fallacious parts in the writings and using coded feedback
		Scary and making the writing process harder	1	Negative perceptions about coded feedback	
SUGGESTIONS		More detailed explanations “why is there a mistake?”	1	Suggestion about coded feedback	Suggestion about coded feedback

QUESTION 5 – “Do you think you are now more aware of logical fallacies in your own writing?”

R	F	Codes	F	Categories	Themes
YES	13	Learnt to base arguments on proof rather than personal views and emotions	1	Gaining awareness	Positive attitudes towards gaining awareness of logical fallacies
		Started to notice them in daily life	3	Gaining awareness	
		Notice they help people approach others in a more thoughtful and cautious way	1	Gaining awareness	
		Notice how famous writers pay attention to them	1	Gaining awareness	
		Notice how to introduce arguments to be a good writer	3	Gaining awareness	
		Notice self-mistakes and fix them	4	Gaining awareness	
		Noticing not to write assertive claims in essays	1	Gaining awareness	
		Awareness of common self-mistakes	3	Gaining awareness	
		Unfamiliar with fallacies before	1	Gaining awareness	
		The decrease in mistakes made me feel self-confident	1	Increasing self-confidence	
		Did not even need to look at the document after some time	2	Gaining awareness	
		Corrected some parts though feedback was not given	2	Gaining awareness	
		Good that fallacies are important for writing but sometimes limiting me	2	Negative perceptions about the treatment	
		Noticing the way of thinking that leads to F5	1	Gaining awareness	
		Preparing a presentation looking at the fallacies & avoiding them	1	Promoting autonomous learning	
		Started to notice my logic is gone and my mouth is only talking while speaking in another language	1	Gaining awareness	
		Didn't pay attention to the 1 st draft since feedback would be given	1	Negative perceptions about the treatment	
		It became like a reflex to try to avoid fallacies after some time	1	Promoting autonomous learning	
		Was able to understand my own mistakes over time	1	Gaining awareness	

“Do you pay attention to avoiding making fallacious claims?”

R	F	Codes	F	Categories	Themes
YES	13	Self-awareness of the importance of not making such mistakes	1	Gaining awareness	Positive attitudes towards paying attention to avoiding logical fallacies
		Having the chance to write better essays	1	Improvement in the quality of writing	
		Started to write more carefully	2	Gaining awareness	
		Pay attention to common self-mistakes while reading the essay after writing it	2	Gaining the habit of critically evaluating arguments	
		Read the essay again especially for logical fallacies	3	Gaining the habit of critically evaluating arguments	
		Check if anything sounds wrong after writing the essay	4	Gaining the habit of critically evaluating arguments	
		Check the essay against the teaching document	3	Promoting autonomous learning	
		Check emotional and strong vocabulary using keywords	1	Gaining awareness	
		Listening to sources more critically in terms of fallacies	1	Gaining the habit of critically evaluating arguments	
		Planning arguments in mind before starting to write	1	Gaining the habit of critically evaluating arguments	
		I might think of a solution while waiting for the feedback	1	Positive contribution of the time between 1 st & 2 nd drafts	
		Embraced the topic and it has become automatic to avoid them	2	Gaining the habit of critically evaluating arguments	
		Didn't think over fallacies too much since feedback would come anyway	1	Over-dependence on teacher corrective feedback	Negative attitudes towards paying attention to avoiding logical fallacies
		Tendency to exaggerate when the question asks personal opinions rather than supporting or refuting	1	Points for further development	

QUESTION 6 – “Do you think you approach the information you find in a source in a more critical way in terms of logical fallacies after this class?”

R	F	Codes	F	Categories	Themes
YES	11	Good samples helped understand how to write	1	Noticing how to write in a fallacy free manner	Positive attitudes towards paying attention to logical fallacies in outside sources
		Noticing the quality of language in articles	3	Noticing how to write in a fallacy free manner	
		Not appreciating the writer if there are logical fallacies	1	Adopting a negative attitude in the presence of fallacies	
		Will definitely be aware if there are fallacies	1	Gaining awareness	
		Helped a friend by finding the fallacies in his composition and fixing them	1	Noticing how to write in a fallacy free manner	
		Knowledge gained by making mistakes becomes memorable and is reflected in life naturally	1	Gaining awareness	
		Notice the mistakes that I myself make in the articles that I read rather than all of them	1	Noticing how to write in a fallacy free manner	
		Especially pay attention to non-native speakers while listening to videos	1	Having a critical approach towards the content	
		Less trust towards the source in case of fallacies	4	Adopting a negative attitude in the presence of fallacies	
		Questioning the given information in the source	1	Having a critical approach towards the content	
		More tolerable if the source is informal	1	Adopting a negative attitude in the presence of fallacies	
		Added the fallacious info in the source in my writing by fixing the logical fallacy mistake	1	Gaining awareness	
		Some mistakes are more tolerable, some are not	3	Adopting a negative attitude in the presence of fallacies	
NO	2	Did not look at the sources with a critical eye	1	Lack of a focus on the fallacies in the sources	Negative attitudes towards paying attention to logical fallacies in outside sources
		May not be able to notice mistakes in formal articles	1	Lack of a focus on the fallacies in the sources	

QUESTION 7 – “Do you have a quality that you think you developed at the end of this process?”

R	F	Codes	F	Categories	Themes
YES	13	Looking at events in a more logical and critical way	1	Having a more critical approach	Areas of development after the treatment
		Noticing fallacies on TV	1	Gaining awareness in other areas	
		Trying to avoid fallacies in daily conversations by filtering ideas rather than immediately stating them	1	Gaining awareness in other areas	
		Awareness of the chance to break people's heart less and approach them in a more thoughtful way	1	Using tentative language	
		The importance of using tentative language	7	Using tentative language	
		Asking questions to self as to the quality of the sentences	2	Having a more critical approach	
		Paying attention to avoiding fallacies in daily life	2	Gaining awareness in other areas	
		Avoiding generalizations	5	Improvement in certain types of fallacies	
		Paying attention to avoiding F5 while writing	1	Improvement in certain types of fallacies	
		Thinking over how to integrate information encountered in sources in my own writing	1	Having a more critical approach	
		Improvement in red herring	2	Improvement in certain types of fallacies	
		Improvement in not using emotive language	1	Improvement in certain types of fallacies	
		Proofreading and editing	1	Gaining awareness in other areas	
		Noticing that fallacies affect content integrity and fluency in writing negatively	1	Gaining awareness	
		Gaining awareness about logical fallacies	5	Gaining awareness	
		Wrote in a more confident way over tasks	1	Gaining confidence	
		Fallacies could be learnt just by checking, without spending a special effort	1	Negative perception	

QUESTION 8 – “Is there anything that you think you are still having difficulty at the end of this process?”

R	F	Codes	F	Categories	Themes
YES	11	Tendency to integrate emotions and pity despite cognitive effort not to do it	1	Further improvement needed in certain types of fallacies	Views about areas of further development after the treatment
		Connecting a reason to the wrong conclusion	1	Further improvement needed in certain types of fallacies	
		Going off-topic	2	Further improvement needed in certain types of fallacies	
		Difficult to analyze reason-result depending on the level of mental tiredness	3	Further improvement needed in certain types of fallacies	
		Trying not to offer assertive claims	1	Further improvement needed in certain types of fallacies	
		Feeling the dilemma of politically correct discourse	1	Further improvement needed in certain types of fallacies	
		Not digested all of them completely & still has difficulty in seeing the mistake sometimes	1	Inability to notice logical fallacies easily at times	
		Feel restricted to sound academic and formal	1	Difficulties arising from language use	
		Language is not always enough to change mistakes easily	1	Difficulties arising from language use	
		Do not know what to do with fallacies that do not appear in my own writing despite learning the repeating ones very well	4	Lack of experience with the types unobserved in one's writing	
		Trying not to make the mistakes that were not made before at all	2	Lack of experience with the types unobserved in one's writing	
		Some parts that he didn't agree, but tried to keep the focus of in mind	1	Disagreeing with certain parts	
NO	2	Now know how to do things / how and what to check	1	Being familiar with what to do	Views about no further development needed after the treatment
		We do not repeat the mistakes once we make and get feedback on them	1	Benefits of process writing / the treatment	
		Checking the draft might have helped me not to make some of the mistakes	1	Benefits of process writing / the treatment	
EXTRA		Outlining helps/may help see the connections between the reason and the conclusion	2	Individual strategy	Further needs in other areas
		Going off topic in presentations, as well	1	Further development needed in speaking	
		Logical fallacies in speaking	1	Further development needed in speaking	

QUESTION 9 – “What do you think about the learning and teaching materials used in this process?”

R	F	Codes	F	Categories	Themes
YES (Sentence analysis)	11	Looking at from someone else's eyes through discussions	1	Benefits of “Sentence Analysis Activity “	Positive attitudes towards “Sentence Analysis Activity
		Seeing the potential mistakes despite not making them	5		
		Having fun together while learning	5		
		Going over sentences shortly after writing them in a fresh way	1		
		Nice that sentences were chosen from our own writings	6		
		An encouraging, fun, interactive, and engaging class activity	5		
		Prepared me by showing there are fallacies & must be avoided	3		
		Would be panicked and demotivated if the teaching guide was given before such a task	1		
		Trying to find the mistakes of others was challenging & useful	1		
		Good for having practice	2		
		Felt there was no mistakes when it was first given	7		

		Rather than memorizing, we discovered fallacies	3		
		A natural activity since the mistakes were real	2		
		More memorable and informative	2		
		Technical information is boring	2		
YES (Forum Discussion)	8	See the differences between different perspectives	1	Benefits of "Forum discussion" activity	Positive attitudes towards "Forum discussion" activity
		Writing 2 sentences let us see a good example even if one was not so good	1		
		Good that the writer responded to the answers	1		
		Good for having practice	3		
		Providing interaction with the other students	2		
		A fun activity	3		
		We learnt from each other	3		
		Seeing more mistakes helps having more awareness	1		
YES (Self-evaluation sheet)	3	Helped me see the percentages of my mistakes See if the mistakes decrease over time	2 1	Benefits of "Self-evaluation sheet"	Positive attitudes towards "Self-evaluation sheet"
NEUTRAL (Self-evaluation sheet)	4	Didn't use it, but could be useful if I used Could be useful for those with lower proficiency	2 2	Perceptions about "Self-evaluation sheet"	Neutral attitude towards "Self-evaluation sheet"
NO (Sentence analysis)	2	Not effective	2	Negative perceptions about "Sentence Analysis Activity"	Negative attitudes towards "Sentence Analysis Activity"
		Sentence – paragraph – essay wholeness is broken	2		
NO (Forum discussion)	5	Not effective	2	Negative perceptions about "Forum discussion" activity	Negative attitudes towards "Forum discussion" activity
		Sentence – paragraph – essay wholeness is broken	2		
		Quite unnatural since they were made up on purpose	1		
		Felt like it was a procedural activity	1		
		I had a more holistic approach to fallacies	1		
		The teaching guide was enough	1		
		Some examples were too obvious and did not require critical thinking	1		
NO (Self-evaluation sheet)	6	Did not need to use self-evaluation sheet due to writing meticulously	2	Negative perceptions about "Self-evaluation sheet"	Negative attitudes towards "Self-evaluation sheet"
		Did not use self-evaluation since it would be hard to look at it and concentrate at the same time	1		
		I wanted to concentrate on writing the essay	3		

RÉSUMÉ

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High School	Nedim Ökmen Anatolian Teacher Training High School	2007
Bachelor's Degree	Middle East Technical University	2011
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Teacher & Testing Unit Member, 2018-2019	METU Development Foundation Schools, Ankara	Teacher of English
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Foreign Languages	English, German
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GAZİLİ OLMAK AYRICALIKTIR...