

Logical Fallacies in Thai EFL Learners' Argumentative Writing: A Case Study of
the Third-year English Major Students
การใช้เหตุผลวิบัติในงานเขียนเชิงโต้แย้งของผู้เรียนไทยที่เรียนภาษาอังกฤษในฐานะ
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Abstract

The aim of this study was to identify types of logical fallacies and to examine the most frequent logical fallacy made by Thai EFL third-year English-major students in argumentative writing. Thirty-seven pieces of argumentative essays written by third-year English-major students who enrolled in a persuasive and argumentative writing course (205334) at Naresuan University were collected. This study employed the theory of logical fallacy proposed by Mayfield (2006) to analyze students' writing. Thereafter, fallacies were divided into categories and counted. The quantitative data then were calculated into percentages to examine the frequencies. Hasty generalization in the type of inductive fallacy found to be the most frequent logical fallacy, followed by false cause in the type of inductive fallacy, prejudicial language in the type of manipulation through language, and word ambiguity in the type of manipulation through language, successively. It can be concluded that students had difficulties in effective argumentative writing, and instructors should prioritize reasoning as much as grammar and educate how to avoid using a logical fallacy. It is suggested that future research on different levels of students or majors should be conducted in order to see more differences between groups. Moreover, Mayfield's logical fallacy framework could be used to analyze different types of writing that also contain reasoning such as persuasive writing, and future researchers could employ other types of research instruments to explore students' logical fallacies in reasoning such as interviewing.

Keywords: Logical fallacies, EFL learners, Argumentative writing

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Introduction

Rationale of the study

Writing is one of the most crucial skills that students acquire in learning English (Phosa, 2020). In addition, English writing is essential in second language academic contexts around the world (Chuenchaichon, 2022). Bhowmik (2021) states that it is crucial for L2 learners to have good writing skills, especially in academic settings since a high percentage of students learn English for academic and professional purposes that require advanced writing skills.

Interestingly, it is essential for students to have argument skills because it enables students to thoroughly comprehend and analyze existing arguments around them (Lunsford et al., 2004). According to Ferris (1994), argumentative writing is identified to be the most difficult type of writing because of the features itself. That is, students are required to take a position on a controversial issue and provide arguments to persuade readers to agree with and accept their position. In writing arguments, at the same time, it is necessary for students to analyze and evaluate information from a variety of sources and synthesize that information with their own ideas (Warren, 2010).

According to Crowhurst (as cited in Kitvilairat & Modehiran, 2018), it is even hard for the native English speaker to generate an effective argumentative writing. Likewise, Thai students still have difficulty in writing argumentation (Kitvilairat & Modehiran, 2018). Therefore, both native and non-native speaker writers face similar problems in writing an argumentation. Khoiri and Widiati (2017) demonstrate that it is not an easy task for writers to create logical arguments because a lot of writers are still encountered with logical fallacies, which are particular problems presented in reasoning. Thus, in order to improve writing skills, a logical fallacy analysis can help writing teachers know the difficulties learners face so that they can find ways to improve their teaching.

There have been various research studies with regard to logical fallacies, particularly in EFL setting, employing different approaches to analyze learners' logical fallacies, which describe causes of making logical fallacies and categorize the kinds of logical fallacies made in argumentative writing. However, to the researchers' knowledge, there have not been any research studies examining logical fallacies altogether with Thai EFL students. Accordingly, the researchers would like to analyze logical fallacy, focusing on argumentative writing by Thai EFL English major students.

Literature review

Background information

Argumentative writing plays a significant role in academic settings. It encourages students to completely understand controversial topics as well as carefully evaluate others' arguments in order to claim rationally via employing logic (Hasibuan, Yusriati, & Manurung, 2020; Jin et al., 2022). Moreover, to strengthen their reasoning, students need to have enough effective knowledge through attentive analysis and assessment of diverse information before synthesizing the information into their language. As a result, argumentative writing enables students to be more proficient in academic knowledge (Hasibuan et al., 2020; Lismay, 2020; Shauda, 2019). In addition, it is important to note that the Educational Testing Service (2009) had taken valid argumentations to be the well-established criterion for evaluating the essays in international proficiency examinations, for example, IELTS and GRE (Atai & Nasser, 2010).



Accordingly, there have been argumentative writing courses in many countries, especially in EFL settings; nonetheless, EFL students face difficulties in writing logical arguments, and making logical fallacies is the primary problem (Bacha, 2010; Hasibuan et al., 2020). The concept of logical fallacy is a problem even for English major students in some countries, for example, Indonesia, Iran as well as Thailand (Andayani, 2014; Atai & Nasser, 2010; Shauda, 2019; Davarpanah, Izadpanah & Fasih, 2021; Khoiri & Widiati, 2017; Lismay, 2020; Nanni & Wilkinson, 2014). The logical fallacy can be defined as an argument that contains irrelevant statements or draws insufficient conclusions. Mayfield (2006) noted that productive fallacies urge audience's emotions (i.e., fear and pity), twist an issue, and have rhetoric on purpose. It can happen both deliberately and accidentally, but it certainly weakens the argumentation (Hasibuan et al., 2020; Khoiri & Widiati, 2017; Lismay, 2020; Shauda, 2019).

Walton (as cited in Atai & Nasser, 2010) pointed out that the absence and presence of logical fallacies judge the strength of argumentation. Also, Hansen (as cited in Lismay, 2020) said that the ability to evaluate and avoid fallacious arguments is a proper measure for good argumentation. Therefore, understanding the logical fallacy will benefit students to write the argumentative writing effectively.

Theoretical framework

This sub-section discusses some relevant theories which are related to the study. Those are divided into two parts: logic and logical fallacy. The discussion of each part is presented below.

1. Logic

1.1 The nature of logic

According to Cambridge University Press (n.d.), logic means "a particular way of thinking, especially one that is reasonable and based on good judgment." The term of 'logic' was introduced by Thomas (1986) as the study of the elements of good reasoning as well as the differences between good and bad reasoning. Similarly, Copi, Cohen and Rodych (2016) described it as the study of the process that aided in distinguishing correct from incorrect reasoning. Moreover, Copi, Cohen, and Flage (2006) and Kelley (1990) state that it is the study of the quality of arguments, and the main focus of the study is on reasoning to support any proposition with some acceptable reasons serving as a form of self-defense. However, logic will not guarantee success, but it provides writers with the sharpness and clarity of reasoning.

1.2 The importance of studying logic

Studying logic is definitely important. According to Thomas (1986) and Copi et al. (2006), one reason for learning logic is it encourages us to seek good reasons for our beliefs and enables us to construct better arguments which helps clarify our own thinking and writing, resulting in winning arguments and convincing other people of the truth of our beliefs. Next, understanding logic can help us reach more accurate ideas, make the best decisions, and avoid being fooled because we will be able to determine whether or not to believe. Most importantly, the most valuable aspect of learning logic is discovering the actual truth, getting authentic knowledge, and applying it to daily life. All in all, understanding logic may help us win arguments and persuade other people but winning an argument does not necessarily mean that our position is the right one because whether an opinion is true or false depends on the facts.



Therefore, the primary goal of studying logic is to help us acquire knowledge and stay in touch with the facts provided (Kelley, 1990).

2. Logical fallacy

2.1 Definition of logical fallacy

Rennemeyer (2021) defined logical fallacy as a mistake in giving a reason which makes an argument less effective or persuasive. Likewise, Nordquist (2019) defined it as an error in reasoning that causes an argument to be invalid. According to Petric (2020), logical fallacy is an inference that is evaluated as logically wrong, undermining the logical validity of an argument so that it is perceived as unsound. Logical fallacies can occur accidentally or on purpose as a way of manipulation. Identifying and avoiding logical fallacies is the responsibility of researchers and authors (McGrath, 2013).

2.2 Type of logical fallacy

According to Mayfield (2006), fallacious arguments can be supported by inept word choice or by intentionally using terms with uncertain, vague, or negative connotations. When chosen purposefully, these phrases can deflect inquiries and obscure the flaws of arguments. The fallacies of word ambiguity, misleading euphemisms, and biased language are three fallacies that aim to persuade by deceptive word use.

Table 1 Type of logical fallacy provided by Mayfield (2006)

Type of logical fallacy	Definition
Manipulation through language 1. Word ambiguity 2. Misleading euphemism 3. Prejudicial language	Uses an unclear word in which readers need to assume the meaning Uses terms intentionally for the purposes of evasion Uses emotive terms based on preconceived opinion
Manipulation through emotions 1. Appeal to fear 2. Appeal to pity	Increases fear for an alternate point of view Tries to win support for an argument by exploiting one's opponent's feelings of pity
3. Appeal to false authority 4. Appeal to bandwagon 5. Appeal to prejudice a. Personal attack b. Poisoning the well	Uses a false or inappropriate authority as support Convinces people by appealing to prevailing knowledge Criticizes a character of someone for reasons that are unrelated to the problem rather than addressing the other person's argument Uses contamination rather than a frontal attack, encouraging bias toward specific people, leading to mistrust of whatever they might say or do
Manipulation through distraction 1. Red herring 2. Pointing to another wrong 3. Straw man 4. Circular reasoning	Draws attention away from the problem and onto unrelated matters Claims that comparable behavior were unremarked Disproves an insignificant point in an argument, then the entire argument is asserted as incorrect by the tactic Rephrase the declaration without justification to make it sound like a reason



Type of logical fallacy	Definition
Inductive fallacy	
1. Hasty generalization	Makes a conclusion without reasonable evidence
2. Either-or fallacy	Insists that there are only two options when there are more choices
3. Questionable statistics	Shows false statistics or unknown statistics
4. Inconsistencies and contradictions	Offers evidence that goes against the conclusion
5. Loaded questions	Uses a prejudiced inquiry to get a fixed answer
6. False analogy	Omits important distinctions on a comparison of two things that may have some similarities
7. False cause	Claims a causal connection between events without reasonable and adequate evidence
8. Slippery slope	Shows assertion without providing sufficient proof that one incident will cause a chain reaction

2.3 The importance of studying logical fallacy

There are various reasons why you should learn about logical fallacy. According to Stearns (2022), the first reason for learning logical fallacy is that it helps to improve reasoning and evaluating skills in all kinds of arguments. Another reason, it widely enhances the quality of philosophical debates. In agreement with the Royal Melbourne Institute of Technology (RMIT) University Library, studying logical fallacy is a tool that is used to critically analyze claims people make. Whether the claims come from a journal article, news item, opinion piece or an annoying relative, knowing a defective argument when you hear it will help you evaluate statements. In conclusion, acknowledging logical fallacy helps you in many aspects, such as improving reasoning and evaluating skills, encouraging debating skills, and discovering the truth.

3. Argumentative writing

3.1 Definition of argumentative writing

Argumentative writing is the core subject that third-year English major students must learn. Toulmin (2003) defined an argument as “the sequence of interlinked claims and reasons that, between them, establish the content and force of the position for which a particular speaker is arguing.” Sinnott-Armstrong and Fogelin (2014) defined an argument as a concerned collection of sentences, statements, or propositions, referred to as premises that are determined to provide an argument of some sort for a sentence, statement or proposition, referred to as a conclusion. Argumentation is a premise to persuade and induce readers by speaking and writing to provide proof or logical reasons (Wahid & Marni, 2018). Oshima and Hogue (2013) defined an argument essay as a writing style that shows your bias on an issue by using supporting reasons to persuade the reader that the idea is correct. All arguments are constituted from compulsory components, such as a claim and data, and subordinate components, such as counterargument and rebuttal (Qin & Karabacak, 2010).



3.2 Generic structure of argumentative writing

The instructors in the argumentative and persuasive writing subject only use Longman Academic Writing Series Essays in teaching throughout the course. An argumentative essay contains an explanation of the issue, a clear thesis statement, a summary of the opposing arguments, and personal arguments. In an argumentative essay, the text provides supporting ideas or points of view, and discusses the other side's reasons and rebuttals. The main element in writing an effective argumentative essay is organized disputation. The writers can arrange an argumentative essay in several ways, such as a block pattern or a point-by-point pattern related to this outline structure (Oshima & Hogue, 2013).

Table 2 The elements of an argumentative essay

Block pattern	Point-by-point pattern
1. Introduction - Explanation of the issue - Thesis statement	1. Introduction - Explanation of the issue, including a summary of the other side's arguments - Thesis statement
2. Body <div style="text-align: center;">Block 1</div> A. Summary of the other side's arguments B. Rebuttal to the first argument C. Rebuttal to the second argument D. Rebuttal to the third argument <div style="text-align: center;">Block 2</div> E. Your first argument F. Your second argument G. Your third argument	2. Body A. Statements of the other's side's first argument and rebuttal with your own counterargument B. Statements of the other's side's second argument and rebuttal with your own counterargument C. Statements of the other's side's third argument and rebuttal with your own counterargument
3. Conclusion	3. Conclusion—may include a summary of your point of view

Previous studies

Logical fallacy plays an important role in argumentative writing to detect invalid or unreasonable arguments. Accordingly, a number of studies are conducted on the analysis of the logical fallacies in argumentative writing in various countries, especially in the EFL setting.

Khoiri and Widiati (2017) analyzed the logical fallacies in essays written by Indonesian EFL learners from the English Department of the State University of Malang. Forty argumentative essays were analyzed by the classification of logical fallacy provided by Mayfield (2006). It was revealed that the students were not aware of writing the fallacious arguments. Moreover, logical fallacy was a fresh notion and was a problem for them. The researcher suggested students learn logical fallacies in order to reduce fallacious claims.

Shauda (2019) conducted a similar study on examining informal logical fallacies in argumentative writing made by students of the English Education Department in IAIN Bukittinggi. Twenty-eight argumentative essays were analyzed by employing logical fallacy, which was classified by Mayfield (2006). The results revealed that hasty



generalization fallacy was used the most, while only one student used the misleading euphemism fallacy. The possible reasons were insufficient samples, and conclusions that lack evidence from authorities.

In addition, Lismay (2020) investigated logical fallacies in argumentative writing with 28 students in the fourth semester of the English department of IAIN Bukittinggi. The argumentative writing was a mid-term test. The logical fallacy taxonomy proposed by Mayfield (2006) was adopted to analyze all documents. The finding showed that inductive fallacy was the most common fallacy employed by 76% of participants.

Finally, the studies of logical fallacy are conducted not only in writing but also in oral argument. For example, Hasibuan et al. (2020) examined the argument elements and logical fallacies in argumentative utterances of 74 English major students from 3 classes in the fourth semester. Students' arguments were interpreted based on the theory of Van Eemeren, Grootendorst, and Henkemans (2002) and the theory of Mayfield (2014). The result revealed that hasty generalization was the most common fallacy, followed by appeal to pity, appeal to fear, questionable statistics, slippery slope, appeal to the bandwagon, circular reasoning, pointing to another wrong, and personal attack, respectively. Furthermore, it was also found that lack of intelligence to make proper reasoning and avoid a fallacious argument, insufficiency of a lexicon, and nervousness and anxiety during the discussion were the three main reasons for making logical fallacies.

Purposes of the study

1. To identify the types of the fallacies made by Thai EFL third-year English-major students in argumentative writing.
2. To examine the most frequent logical fallacies made by Thai EFL third-year English-major students in argumentative writing.

Research questions

1. What are the types of logical fallacies made by Thai EFL third-year English-major students in argumentative writing?
2. What are the most frequent logical fallacies made by Thai EFL third-year English-major students in argumentative writing?

Research Method

Participants

The participants included 37 third-year English-major students who enrolled in a persuasive and argumentative writing course (205334) in the first semester of the academic year 2021 at Naresuan University. Random sampling was used to get all of the participants who were Thai EFL learners.

Research instrument

An online midterm exam was used in this study. All participants did an argumentative writing exam with typing under exam conditions, and they were instructed to write an essay of 400-450 words, within two hours and thirty minutes. The participants were allowed to use online dictionaries but were not allowed to use any search engines for



citation. Turning on the camera was adopted to prevent cheating. The participants chose one writing topic from the following topics.

A. Underground lottery should be legalized (chosen by two students)

B. Minor subjects are useless for English-majored students (chosen by twenty-one students)

C. Despite the COVID-19 pandemic in Thailand, students at all levels should be allowed to study on-site (chosen by fourteen students)

Data Collection

In this study, researchers used argumentative writing written by all participants in an online midterm exam. The data were collected by participants attaching midterm exam files through Google Forms. At every stage, the participants' names would remain confidential, and the results of this study were used for academic purposes only.

Data Analysis

After the data were collected, each writing was analyzed under all researchers' discussion to find out the types and number of fallacies. In terms of analysis, the theory of logical fallacy proposed by Mayfield (2006) was mainly employed as it could extensively identify the types of fallacies, including the type of manipulation through language, the type of manipulation through emotions, the type of manipulation through distractions, and the type of inductive fallacies. It is important to note that the textbook Longman Academic Writing Series Essays by Oshima and Hogue (2013) was adopted as the main textbook of the persuasive and argumentative writing course. Therefore, the content organization or generic structure of argumentative writing in this textbook was used to analyze.

After that, fallacies were counted and calculated into percentages to examine the frequency. In the following section, the results of the data analysis are shown. Table 3 lists the types of fallacies, frequency of fallacies, percentage of fallacies, and rank. In Appendix 1, Table 4 lists examples of logical fallacies that appeared in the participants' argumentative writing.

Findings and Discussion

Findings and Discussion

The results and discussion of this research are presented according to the two research questions (RQs) of this study.

Table 3 Frequency of Fallacious Arguments

Type of fallacies	Frequency	Percentage	Rank
Manipulation through language			
Word ambiguity	71	9.11%	4
Misleading euphemism	3	0.39%	15
Prejudicial language	108	13.86%	3
Manipulation through emotions			
Appeal to fear	62	7.96%	6
Appeal to pity	56	7.19%	7



Type of fallacies	Frequency	Percentage	Rank
Appeal to false authority	7	0.90%	13
Appeal to bandwagon	9	1.16%	12
Appeal to prejudice			
a. Personal attack	2	0.26%	16
b. Poisoning the well	11	1.41%	11
Manipulation through distraction			
Red herring	66	8.47%	5
Pointing to another wrong	5	0.64%	14
Straw man	47	6.03%	8
Circular reasoning	31	3.98%	9
Inductive fallacy			
Hasty generalization	149	19.13%	1
Either-or fallacy	3	0.39%	15
Questionable statistics	3	0.39%	15
Inconsistencies and contradictions	11	1.41%	11
Loaded questions	2	0.26%	16
False analogy	3	0.39%	15
False cause	115	14.76%	2
Slippery slope	15	1.93%	10
Total	779	100%	

According to Table 3, the result of the study shows that hasty generalization in the type of inductive fallacy is the most frequent logical fallacy (149 fallacies, or 19.13%). It is followed by fallacies of false cause, also in the type of inductive fallacy (14.76%), prejudicial language in the type of manipulation through language (13.86%), word ambiguity in the type of manipulation through language (9.11%), successively. An example of hasty generalization in the type of inductive fallacy is “Having too many other subjects can cause students not to have enough focus on their major subjects.” It is considered to be a hasty generalization because the participant stereotyped that learning other subjects in this amount was too much for students. An example of false cause in the type of inductive fallacy is “When they study online, they cannot see anyone, so that is a cause of stress in students.” It is considered to be a false cause as the reason that learners could not see anyone was not valid. In an online study, it is impossible that learners not to meet anyone. An example of prejudicial language in the type of manipulation through language is “These students will have to work significantly harder due to the minor subject are whole different world to them which caused them a great amount of stress.” It is considered to be prejudicial language as the participant used many adjectives and adverbs to express bias. The other examples of written texts that contain these mentioned fallacies can be seen in Appendix 1.

As it can be seen, the percentages among logical fallacies of hasty generalization, false cause, prejudicial language, and word ambiguity are not considerably different. Therefore, these are the main types of logical fallacies committed by these learners in argumentative writing. The finding corresponded with the previous research conducted



by Shauda (2019) who examined fifth-semester English Education IAIN Bukittinggi in argumentative writing and found that hasty generalization in the type of inductive fallacy was also the most frequent logical fallacy. Similar research was also found in Lismay (2020) who investigated logical fallacy committed by fourth-semester students of English major in argumentative writing. The result of the study showed that participants' logical fallacy in argumentative writing was classified as inductive fallacy the most.

The reason for this logical fallacy might be the time limitation in the midterm exam. Exam questions require writing 400-450 words in 2 hours and 30 minutes; as a result, some learners jumped to conclusions and supported arguments using just one or none of the evidence. A possible cause of this logical fallacy might be that learners could not cite evidence from experts as instructors did not allow students to search for information on the internet in order to prevent exam corruption. Instructors examine by using experience and paganism programs. As a result, most learners supported their arguments and concluded by using their biased supporting idea, making the arguments ineffective. Another cause might be that participants do not finish the analytical and critical reading course and persuasive and argumentative writing course yet, and make participants not have enough information or knowledge to write argumentative essays effectively. The above reasons are consistent with previous research. According to the assumption of Shauda (2019), the reason for hasty generalization in argumentative writing was writing insufficient samples in the conclusion and concluding without evidence from experts.

Conclusion

To answer the research questions, this study identified different types of logical fallacies and the most frequently committed logical fallacies made by Thai EFL English-major students in argumentative writing midterm exam. The finding found that all argumentative writings were written by using logical fallacies in reasoning. Therefore, it can be concluded that the four most common logical fallacy were hasty generalization in the type of inductive fallacy, false cause in the type of inductive fallacy, prejudicial language in the type of manipulation through language, word ambiguity in the type of manipulation through language, successively. Therefore, this study elucidates the difficulties in effective argumentative writing of Thai EFL English-major students and helps instructors recognize the most common logical fallacy that students made and use them to design lesson plans to improve the principles of reasoning in argumentative writing. Moreover, this study suggests that instructors should prioritize reasoning in argumentative writing as much as grammar and educate how to avoid reasoning by using logical fallacy in argumentative writing or other writing.

Recommendations for future studies

After analyzing argumentative writing of the students by using a logical fallacy framework, the findings of the study gave four recommendations for future research. Firstly, the extension of time should be considered for future studies because it would provide writers with more time to reflect and formulate strong arguments. Secondly, it would be a great idea to conduct future research with a different testing condition which is allowing writers to use the internet to let them access more source of information for citations. Thirdly, it could be better if there were more participants in further studies since the research finding would be more reliable. Finally, the potential participants who completed both



analytical and critical reading course and persuasive and argumentative writing course should be used by future researchers.

Limitations of the study

There are four limitations in this study. First, the limitation is due to the limited conditions of the midterm exam. This study is limited due to time constraints. As in the midterm exam, the students had only a short period (2 hours and 30 minutes) to write argumentative writing. Second, students are not allowed to use any search engines for citations, so it is difficult to produce effective logical reasoning. Third, the sample size of this study was too small. The number of participants that the researchers expected was 50 students, but there were only 37 students who were willing to participate in this study. Lastly, the participants do not have the potential to write effective argumentative essays because they have not completed the analytical and critical reading course and the persuasive and argumentative writing course yet.

References

- Andayani, W. (2014). The use of English discourse markers in the argumentative writing of EFL Indonesian and Thai university students: A comparative study. *Journal of Education*, 7(1), 33-39. Retrieved from <https://journal.uny.ac.id/index.php/joe/article/view/5761>
- Atai, R. M., & Nasser, M. (2010). A gender-based study of informal fallacies of argumentation: The case of Iranian advanced EFL learners' writing. *Iranian Journal of Applied Linguistics*, 13(2), 19-45. Retrieved from <https://www.sid.ir/paper/568680/en>
- Bacha, N. N. (2010). Teaching the academic argument in a university EFL environment. *Journal of English for Academic Purposes*, 9(3), 229-241. Retrieved from <https://doi.org/10.1016/j.jeap.2010.05.001>
- Bhowmik, S. (2021). Writing instruction in an EFL context: Learning to write or writing to learn language? *BELTA Journal*, 5(1), 30-42. Retrieved from <https://doi.org/10.36832/beltaj.2021.0501.03>
- Cambridge University Press. (n.d.). Logic. In *Cambridge Dictionary*. Retrieved September 19, 2022, from <https://dictionary.cambridge.org/dictionary/english/logic?q=Logic>
- Chuenchaichon, Y. (2022). An error analysis of written English paragraphs at lexical, syntactic, and paragraph levels made by Thai EFL non-English major students. *3L: Language, Linguistics, Literature: The Southeast Asian Journal of English Language Studies*, 28(2), 96-108. Retrieved from <http://doi.org/10.17576/3L-2022-2802-07>
- Copi, B., Cohen, C., & Flage, D. (2006). *Essentials of Logic* (2nd ed.). New York: Routledge.
- Copi, B., Cohen, C., & Rodych, V. (2016). *Introduction to Logic* (14th ed.). New York: Routledge.
- Davarpanah, N., Izadpanah, S., & Fasih, P. (2021). The relationship between critical thinking, frequency, informal fallacy and evidence in argumentative writing. *Jordan Journal of Modern Languages and Literatures*, 13(2), 303-319. Retrieved from <https://doi.org/10.47012/jjml.13.2.7>
- Educational Testing Service (ETS). (2009). *Analyze an argument*. Retrieved September 12, 2022, from <http://www.ets.org/gre/general/scores/how/argument>



- Ferris, D. R. (1994). Lexical and syntactic features of ESL writing by students at different levels of L2 proficiency. *Tesol Quarterly*, 28(2), 414-420. Retrieved from <https://doi.org/10.2307/3587446>
- Sinnott-Armstrong, W., & Fogelin, J. F. (2014). *Understanding arguments: An introduction to informal logic* (9th ed.). Boston, MA: Cengage Learning.
- Hasibuan, H. S., Yusriati, & Manurung, D. I. (2020). Examining argument elements and logical fallacies of English education students in oral discussion. *Teaching of English Language and Literature*, 8(2), 48-53. Retrieved from <http://dx.doi.org/10.30651/tell.v8i2.5771>
- Jin, Z., Lalwani, A., Vaidhya, T., Shen, X., Ding, Y., Lyu, Z., ... Schölkopf, B. (2022). *Logical fallacy detection*. Retrieved September 12, 2022, from <https://arxiv.org/abs/2202.13758>
- Kelley, D. (1990). *The art of reasoning with symbolic logic* (expanded ed.). New York: W.W. Norton.
- Khoiri, E. N., & Widiati, U. (2017). Logical fallacies in Indonesian EFL learners' argumentative writing: Students' perspectives. *Dinamika Ilmu*, 17(1), 71-81. Retrieved from <http://dx.doi.org/10.21093/di.v17i1.638>
- Kitvilairat, P., & Modehiran, P., (2018). Effects of argumentative writing instruction using genre-based approach and critical thinking framework on argumentative writing ability of upper secondary school students. *An Online Journal of Education*, 13(4), 388-403. Retrieved from <https://so01.tci-thaijo.org/index.php/OJED/article/view/207253>
- Lismay, L. (2020). Logical fallacies on students' argumentative writing. *Journal of English Language Pedagogy*, 5(2), 21-27. Retrieved from <https://doi.org/10.36665/elp.v5i2.321>
- Lunsford, A. A., & Ruskiewicz, J. J., (2004). *Everything's an argument* (7th ed.). Boston, MA: Bedford/St. Martin's.
- Mayfield, M. (2006). *Thinking for yourself: Developing critical thinking skills through reading and writing* (7th ed.). Belmont, CA: Wadsworth Publishing.
- Mayfield, M. (2014). *Thinking for yourself: Developing critical thinking skills through reading and writing* (9th ed.). Belmont, CA: Wadsworth Publishing.
- McGrath, M. (2013). Criminology research: Theory testing and publishing. In B. E. Turvey, & S. Crowder (Eds.), *Ethical justice: Applied issues for criminal justice students and professionals* (pp. 87-102). Cambridge, MA: Academic Press.
- Nanni, A. C., & Wilkinson, P. J. (2014). Assessment of ELLs' critical thinking using the holistic critical thinking scoring rubric. *Language Education in Asia*, 5(2), 283-291. Retrieved from http://dx.doi.org/10.5746/LEiA/14/V5/I2/A09/Nanni_Wilkinson
- Nordquist, R. (2019). *What is a logical fallacy?* Retrieved September 12, 2022, from <https://www.thoughtco.com/what-is-logical-fallacy-1691259>
- Oshima, A., & Hogue, A. (2013). *Longman academic writing series 4: Essays* (5th ed.). New York: Pearson Education ESL.
- Petric, D. (2020). *Logical fallacies*. Retrieved September 17, 2022, from <https://www.researchgate.net/publication/339288684>
- Phosa, S. (2020). *A study of English writing skills of L2 students with blended learning approach* (Master's thesis). Phitsanulok: Naresuan University.



- Qin, J., & Karabacak, E. (2010). The analysis of Toulmin elements in Chinese EFL university argumentative writing. *System*, 38(3), 444-456. Retrieved from <https://doi.org/10.1016/j.system.2010.06.012>
- Rennemeyer, A. (2021). *Logical fallacies – Definition and fallacy examples*. Retrieved September 12, 2022, from <https://www.freecodecamp.org/news/logical-fallacies-definition-fallacy-examples/>
- Shauda, A. (2019). *An analysis of logical fallacies in argumentative writing at the fifth semester of English education department in IAIN Bukittinggi* (Bachelor' thesis). Sumatera Barat: Islamic State Institute of Bukittinggi.
- Stearns, P. (2022). *Why study fallacies?* Retrieved September 12, 2022, from <https://lucidphilosophy.com/320-2/>
- The RMIT University Library. (n.d.). *Logical fallacies*. Retrieved Sep 12, 2022, from <https://emedia.rmit.edu.au/learninglab/content/logical-fallacies>
- Thomas, S. N. (1986). *Practical reasoning in natural language* (3rd ed.). Hoboken, NJ: Prentice-Hall.
- Toulmin, S. (2003). *The uses of argument* (2nd ed.). Cambridge: Cambridge University Press.
- Van Eemeren, F. H., Grootendorst, R., & Henkemans, A. F. S. (2002). *Argumentation: Analysis, evaluation, presentation*. New York: Routledge.
- Wahid, A., & Marni, S. (2018). Content area literacy strategy for argumentative writing learning in higher education. *Journal of Innovative Studies on Character and Education*, 2(2), 234–246 Retrieved from <https://www.researchgate.net/publication/329162873>
- Warren, J. E. (2010). Taming the warrant in Toulmin's model of argument. *English Journal*, 99(6), 41–46. Retrieved from <https://www.jstor.org/stable/20787665>



Appendix A

Table 4 Examples of logical fallacies

Type of Fallacies	Example
Manipulation through language Word ambiguity Misleading euphemism Prejudicial language	Minor subjects are secondary courses of study that students have to decide on and choose to learn. Because a Minor courses spent less time learning English and some students have to review lessons. These students will have to work significantly harder due to the minor subject are whole different world to them which caused them a great amount of stress.
Manipulation through emotions Appeal to fear Appeal to pity Appeal to false authority Appeal to bandwagon Appeal to prejudice a. Personal attack b. Poisoning the well	Therefore, it brings the virus to our family. Many parents cannot pay for electronic devices for their children. The age of people between 8-25 so many have not been vaccinated. Most company will choose the person who have reliable credit. This argument, however, shows that the opponents misunderstand about learning a Minor course. This argument is wrong.
Manipulation through distraction Red herring Pointing to another wrong Straw man Circular reasoning	Because a Minor courses spent less time learning English and some students have to review lessons. It is true that you have to start learning from the basic, but to study your major subjects, you have to start from the basic as well. This is true but its cost is steep. It can be brave and confident to express more opinions because you don't have to show yourself which does not have to reveal your appearance.
Inductive fallacy Hasty generalization	Having too many other subjects can cause students not to have enough focus on their major subjects.



Type of Fallacies	Example
Either-or fallacy	When underground lottery is still illegal, there will still be bribery between the host of lottery gamble and government agencies.
Questionable statistics	In presently, who has the vaccines is around 13 percent from of all.
Inconsistencies and contradictions	students who being hesitant about their goal can have the evident observation through the major course that they chose.
Loaded questions	Do you think online studying can really replace on-site studying?
False analogy	Languages are like the center media to communicate and leads to foreigners to understand the culture and traditions including the ease of negotiating conference.
False cause	When they study online, they cannot see anyone, so that is a cause of stress in student.
Slippery slope	On the contrary, studying online requires a high-quality electronic device and a high-speed Internet connection. In fact, not every student can effort enough equipment to study. Therefore, these students cannot learn to catch up with other friends.