

CHAPTER V

CONCLUSION, IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

As the last part of this thesis, this chapter describes conclusions of this study released from all data discovered and presented in the previous chapters. It also constitutes the study implications, limitations, and recommendations for further research.

5.1 Conclusion

The first research question regarding the patterns of reasoning used by students related to the fallacies they produced were analyzed based on the framework proposed by Sadler & Zeidler (2005). Based on the results of interviews conducted with 10 students, it was found that 14 reasoning patterns belonged to the rationalistic reasoning pattern, 1 reasoning belonged to the emotive reasoning pattern, and 4 reasoning belonged to the intuitive reasoning pattern. Each interview excerpt with participants describing each student's reasoning pattern has been described in chapter IV. This reasoning pattern is important to be explored to understand the students' basics and processes in reasoning that lead to fallacies. Interestingly, this pattern of reasoning, as far as I observed, has been widely studied in the field of social-science but has not been commonly investigated in the EFL context.

Related to the findings of this RQ 1, several unique things were found. First, although some participants have based their reasoning on a rationalistic pattern, which is based on logic, this has not completely anticipated the appearance of fallacies in their claims. Some of the students' claims, in their findings, contained defects so that they belonged to certain types of fallacies based on the fallacy taxonomy used in this study. Second, this pattern did not always appear independently; several students' reasoning patterns appeared in pairs but none of the three patterns appeared simultaneously (multiple reasoning patterns). This paired pattern consisting of rationalistic reasoning and emotive reasoning was made by one of the participants. Although rationalistic reasoning has been used, as previously

explained, the student's claim contained the questionable cause fallacy. Other paired patterns found were intuitive and rationalistic reasoning patterns which also lead to the emergence of one type of fallacy, namely hasty generalization. Thus, it seems clear that the use of rationalistic reasoning does not guarantee that one's claim will be free from fallacy. Furthermore, it was found that even though reasoning patterns were used in pairs, they coordinated and supported one another. Another interesting finding is that, in my best interpretation as a researcher in this study, the intuitive reasoning pattern may contribute the most to the emergence of a fallacy if the resulting claim is flawed, incomplete, baseless, and its validity cannot be traced. This is because intuitive reasoning arises from intuition from a spontaneous appearance (Sadler & Zeider, 2005).

Then, related to the finding that the use of a rationalistic reasoning pattern does not guarantee that students' arguments will be free from fallacies, a crucial point needs to be emphasized here. Since critical thinking is manifested in or by language, perhaps, student logical fallacies do not only arise because of the quality of their thinking but also because of their linguistic capacity. This needs to be comprehended because there are still many teachers who have not understood that most student mistakes in learning are caused by their language ability. Since reasoning and logical fallacies are closely related to one's linguistic capacity, therefore, as the pedagogical implication of the current study, the teaching of language is very important to be effectively carried out to students in all subjects so that their critical thinking skills are honed in it.

For the second research question regarding the fallacies that the participants made in their Expositions, the participants' essays were analyzed by using a fallacy taxonomy proposed by Mayfield (2014) consisting of seventeen categories developed based on three major groupings: (1) manipulations through language; (2) manipulations through language; and (3) inductive fallacy. Those seventeen categories are (1) Appeal to fear, (2) Appeal to pity, (3) Appeal to false authority, (4) personal attack, (5) Poisoning the well, (6) Red Herring, (7) Pointing to another wrong, (8) Straw man, (9) Circular reasoning, (10) Hasty generalization, (11) The

false dilemma, (12) The questionable statistic, (13) contradiction, (14) The loaded question, (15) The weak analogy, (16) Questionable cause, and (17) Slippery slope.

Before the types of fallacies made by the students were determined, their claims were first divided into four main groups which included reports, opinions, argument, and fallacies. Subsequently, it was found that not all students made fallacies in their claims. There were 34 students or about 42.5% of all participants whose essays contained fallacies. Meanwhile, the claims made by 46 other students were free from fallacies according to the fallacy taxonomy used in the current research. In other words, their claims only contained reports opinions, and arguments in which several prominent excerpts have been presented in chapter IV. Because the focus of the present study was on the students' logical fallacies, hence the data analysis mainly focused on the types of fallacies that emerged in the 34 students' essays.

Based on the results of the analysis with 3 inter-raters, it was found that 12 types of fallacies were made by the students while the other 5 types did not appear. The 12 types were: (1) Appeal to fear, (2) Appeal to pity, (3) Appeal to false authority, (4) personal attack, (5) Poisoning the well, (6) Straw man, (7) Circular reasoning, (8) Hasty generalization, (9) The questionable statistic, (10) The weak analogy, (11) Questionable cause, and (12) Slippery slope. The amount of each fallacy was different for each type but the top three categories were the questionable cause followed by hasty generalization and the appeal to fear. Compared to most other studies that focus on analyzing students' fallacy in their argumentative essays, hasty generalization is a type that is always found with a dominating number (Alagozlu, 2007; Atai and Nasser, 2010; Indah and Kusuma (2015), Indah (2016); Khoiri and Widiati, 2017; Oktavia (2014); Oktavia, Kusni, and Yasin (2014); Van Eemeren, Grootendorst, & Snoeck, 2002). In contrast, the fallacy of questionable statistics is one type of fallacy that is rarely found in the EFL domain. This type of fallacy is commonly found in research in the political field such as presidential campaigns and in the field of psychology (Gabbay, Pelletier, Woods, 2012; Stanford encyclopedia of philosophy; Woods, 2012). In addition, the emphasis of teaching on

the students' reasoning skills has not been done, especially in the context of argumentative writing. Meanwhile, the fallacy of questionable cause appeared with a dominating number which was caused by the students' unfounded, unwarranted and incomplete claims which according to the framework of the current study were classified as flawed arguments.

Thus, there are at least 2 points to be highlighted in the data analysis and data presentation related to RQ 2 in the present study. Because almost all studies on logical fallacies are essentially qualitative (Walton, 2000), the data presentation was carried out by presenting quotations from the student claims that were classified as fallacies according to the taxonomy used in the study, then at the end the findings were compared with the number of findings of the particular type in the other studies. Some examples of them are those that have been done by Alagozlu, (2007), Indah (2016), Indah and Kusuma (2015), Khoiri and Widiati (2014), Oktavia (2014), and Oktavia, Kusni, and Yasin (2014). The second point is due to the recognition that fallacy identification can sometimes be very subjective and intricate to do (Alagozlu, 2007; Hundleby, 2010; Khoiri and Widiati. 2017; Mayfield, 2014), 3 inter-raters were deliberately recruited to do the categorization process as a response to this issue. Related to the nature of a common final exam, the last important point to note is about the reality that the students in this study only had the chance to write once without given time to revise those essays or get some feedback after submitted to the teacher. This condition was considered to greatly influence the emergence of the student fallacies. Further, according to Harmer (2001), Murray (1980), and Zamel (2012), several writing stages are needed to be undergone when students write including drafting, redrafting, and revising. In retrospect, thoroughly described in the study limitation section, to allow me to describe the findings in a more comprehensive way, the teaching and learning process on how Exposition, the rules of arguments, and efforts to avoid logical fallacies should have been documented.

As explained in the previous chapters, besides being in critical thinking discussion, studies on logical fallacies are also often associated with Higher-Order Thinking or HOT skills. However, most of the previous studies described in this

thesis depict the relationship between fallacies and students' critical thinking. This relationship is in line with the assumption that a thinking mind is reflected in writing (Stapleton, 2001). Besides, critical thinkers, according to Mayfield (2014), are able to avoid making claims which are improper, unacceptable, and unreliable. Critical thinking is seen as the ability to analyze facts, to formulate and organize ideas, to defend positions, to make comparisons, to draw conclusions, to evaluate arguments, and to solve issues by establishing logical relationships between statements or data based on reliable evidence or source (Beyer, 1995). Thus, the notion of arguments in critical thinking literature has been thoroughly explained in the previous chapters.

In the literature of HOTS, the emergence of logical fallacies is also often linked to the top 3 skills of Bloom's taxonomy, as one of the learning taxonomies, namely analyzing, evaluating, and creating. This means that the inability of students to analyze, evaluate, and determine their position on an issue can cause flaws in their reasoning that are commonly reflected in their arguments. To some extent, the terms critical thinking and HOT are often used by many scholars interchangeably (Appanna, Sulaiman, Wulandari, 2017; King, Goodson, and Rohani, 2004). Brookhart (2010), for example, mentions three definitions of HOT, one of which is defined as critical thinking skills. She also argues that assessing students' logic and reasoning is one of the ways to determine the level of students' cognitive abilities which can be obtained by stimulating multiple-choice questions and essays.

5.2 Study Implications

The findings of the present study brought some pedagogical implications. Regarding the findings that the students' fallacies varied, the findings firstly implied that most EFL students, presumably, have not been taught and could be blind to the rules of making sound arguments in English. For that reason, the students' understanding and skills starting from the very basic rules in argumentation are demanded. For example, as a response towards the emergence of hasty generalization, the lessons about qualifiers and quantifiers, as an instance, are considered important to be taught in argumentative text writing, especially

Exposition, so that the resulting arguments are strong but still valid and grounded. Regarding the answers to the second research question, the findings signified that teachers can guide students to employ correct and proper reasoning and make sound arguments; in other words, free from fallacies.

Moreover, the findings of the current study implied that EFL teachers need to provide students with the knowledge and skills of argumentation, some tenets of forming a healthy argument, and common logical fallacies. Although the notion of teaching critical thinking is still debated (Behar-Horenstein & Niu, 2011), and logic and reasoning have not yet become an intermediate part of our pedagogical aims, this is probably an important point to be taken into account, especially with the demands of 21st-century education contained in the Indonesian current curriculum where students are required to master 4C skills consisting of (1) communication, (2) collaboration, (3) critical thinking, and (4) creativity. Subsequently, so far, most of the research on writing as a product has only focused on whether or not the aspects of language features, generic structures, and other linguistics aspects such as grammar are fulfilled. It is hoped that logical fallacies will also be seen as a crucial element and a form of assessment regarding the validity of arguments made by students. One of them is by tracing their reasoning patterns and finding points of frustration in students so that students can generate healthy arguments. In other words, students' writing is also judged by what is actually behind their writing. Thus, the study also implied that explicit instruction of some common logical fallacies might help the students to familiarize themselves with the concept.

5.3 Study Limitations

As with most studies, this research also has several limitations related to the findings of this research to explain that the data that I gained in this study is not fully appropriate in terms of the teaching of CT and the teaching of writing. First, the length of the essays that the participants wrote in this study was limited. This limitation is related to the fact that the participants are third-grade high school students where according to the objectives of our curriculum, their argumentative

essays are intended as in-class writing exercises or as final exams as preparation to be adult learners. It is hoped that with longer essays, students' views and positions on the issues may become clearer and more elaborated.

The next limitation also deals with the fact that there was no exam prompt provided to the students on the final exam day. In fact, the students were only given some topic choices and they were allowed to choose the topics based on their interests and preferences on particular topics. This condition was considered as one of the causes affecting the findings that many students made many varieties of logical fallacies on their Expositions. In this case, the students were expected to write well, but no specific and clear instruction was given to them. Next, most students in this study only had the opportunity to write one time without any chance to revise those essays after submitted. This limitation relates to the nature of the exam itself which is the final school exam where feedback from the teacher was also not possibly obtained. Regarding the timed examination system, students may also struggle to find and organize their ideas and at the same time, they must ensure that their writing does on time (Cahyono, 2016). So, to some extent, it might be not fair to say that many types of fallacies are found in the students' essays. On the other hand, the students were not given the chance to think critically and deeply, to go through the process of writing as professional writers do. This assumption is based on a general suggestion that writing is recursive meaning that writing has some stages (planning, drafting, revising, and editing) and these stages can be carried out from the initial stage to the final stage and can be continued again until the final result is presented (Kiniry & Strenski, 1985; Widiati & Cahyono, 2006; White & Ardnt, 1991). Therefore, the students need adequate time in getting and organizing their ideas, developing details, using appropriate words and language, and structuring ideas in sentences, as well as maintaining the unity of paragraphs (Laksmi, 2006). If the students were given time to get through the process of writing, probably, the fallacies might also be identified by the teacher so they could get some feedback from the teacher and perhaps from other students as well. In addition, it is also possible that the fallacies that the students made in their final stage after receiving the feedback would be less than the findings

of the present study both in terms of numbers and types. Feedback, according to Brown (2001), Husin & Nurbayani (2017), and Wahyuni (2017), is another critical effect for the student writing process.

The next limitation lies in the reality that I, as the researcher in this study, did not watch and observe the teaching and learning process in the students' classes which means that I did not have the opportunity to see when and how the teacher taught the nature of an argument and all rules regarding it (including how to avoid fallacies). Since these are skills necessary for the student academic success and social life, several scholars have argued that the rules or the knowledge about arguments, as parts of critical thinking skills, have to be directly and explicitly taught (De Bono, 1976; Ennis, 2011; Marin & Halpern, 2011; 1999; Paul, 1993; The Foundation for Critical Thinking, 2019). So, when it came to the findings that many fallacies were found in the students' Expositions, the teaching of those skills mentioned and how the students captured and applied these rules in their writing should have been documented. The overall findings show that most students did not use hedging in their essays which is likely because they were not exposed to hedging during the writing process. Probably, the teacher also did not explain how to use hedging appropriately to avoid fallacies.

As the following limitation, the findings of this study were obtained based on the framework from one taxonomy of logical fallacy. This means that the interpretations given to the findings in this study may not be the same as found in other studies using different taxonomies. Therefore, this research warrants further investigation since it only analyzed the students' essays from one fallacy approach which is, to some extent, possibly different from other fallacy approach points of view (Alagozlu, 2007).

The next limitation lies in the limited number of participants in the study who may be used as an alternative in response to the first limitation and also the fact that the participants came from one school. Notwithstanding the findings obtained, it cannot be denied that school accreditation, students' ability, characteristics, and their language proficiency level affect the findings of the study. It is realized that taking

participants from more than 1 school having different student characteristics (for example the one from a rural area), different accreditations, and different locations will probably affect the findings in the study of logical fallacies. Also, as explained in the presentation of data related to RQ2, the increase in the number of participants interviewed will have an impact on the variety of students' reasoning patterns which gives deeper meaning to the data interpretation.

Therefore, in connection with the shortcomings above, teachers need to comprehend what an Exposition is, what critical thinking is, how critical thinking is relevant to Exposition, how Exposition can develop student critical thinking, and how to express ideas to show their critical thinking abilities. Besides, teachers should understand text types, not only Exposition because fallacies are everywhere. All texts can be used to develop student critical thinking; however, as mentioned in several previous sections, Exposition is considered the best to see student reasoning because one of the elements to assess student critical thinking is in there, namely the argument. All texts require clarity and accuracy which are the standards of critical thinking (Paul & Elder, 2020).

5.4 Recommendations

For further research, regarding the limitations of the research that have been described, it is expected that the essays analyzed will be greater in terms of length (as in students' essays in writing courses in higher education context) so that the data obtained is richer and the data interpretation can be carried out more deeply. Second, further research is expected to increase the number of participants and the schools to get richer and more diverse results so that the findings are more representative. Third, since the results of this study are based on only one taxonomy of logical fallacies, it is expected that further research will be able to see students' writings more deeply and thoroughly by identifying other elements that can be reflected in students' writing. Finally, regarding the emergence of fallacies that can be both intentionally and unintentionally made, it is expected that further research will investigate the factors

that cause the students' fallacies by other research instruments such as in-depth interviews or open-ended questioners.