

Argument Pattern in Student Argumentative Essays in Higher Education Using the Toulmin Model

Aswadi^{1,2*}, Ah. Rafi'uddin¹, Dawud¹, Imam Agus Basuki¹

¹Universitas Negeri Malang, Indonesia

²Universitas Muhammadiyah Sidenreng Rappang, Indonesia

* aswadi.umsrappang@gmail.com

ABSTRACT

This qualitative research analyzes the argument patterns written by first-year undergraduate students by adapting the Toulmin argument structure model consisting of six elements: Claim, data, warrant, backing, qualifier, and rebuttal. Thirty-five students at a private university in South Sulawesi, Indonesia, wrote argumentative essays on the same topic, namely moving the capital city issue. Toulmin elements in student essays were analyzed to determine the pattern of arguments from each student. The research findings show that claim and ground are the components most often found in student argumentation essays. Meanwhile, the rebuttal component is the component that is rarely found. This study's results provide input to teachers and lecturers in teaching writing arguments to further explain, especially on the rebuttal elements. By understanding all the elements of argumentation, the quality of argumentation writing can improve. From these components, argument patterns were found in students' argumentation essays, namely: CD, CDW, CDB, CDWB, CDWQ, CDBQ, CDQ, CDWBQ, CDWBR, CDWQR, CDBR, CDBQR, and CDWBQR.

Keywords

argument element; argument pattern; essay; Toulmin model; higher education

Introduction

Much researcher has done studies on argumentation skills, both studies on written argumentation skills (Hirose, 2003; Wingate, 2012; Michael Nussbaum et al., 2019) as well as verbal argument (Tajabadi, Dowlatabadi, & Mehri, 2014; Rodríguez, Correa, & Ceballos, 2016; Chen, Hand, & Park, 2016). Besides, research on argumentation is carried out at all levels, both on high school students (Knudson, 1992; McNeill & Pimentel, 2010; Venville & Dawson, 2010), college student (Newell, Beach, Smith, & Vanderheide, 2011; Song & Ferretti, 2013; Tsai & Tsai, 2013), teacher (Sampson & Blanchard, 2012; McNeill & Knight, 2013; Arslan, 2013; Conner, Singletary, Smith, Wagner, & Francisco, 2014), and society in general (Lubishtani, 2019; Fan, 2020). Many kinds of research on these arguments writing indicate that research on argumentation has always been an interesting topic and great discussion.

In this study, researchers looked at the argumentation elements in argumentation essays written by first-year students at Muhammadiyah University Sidenreng Rappang. One of the

universities in South Sulawesi, Indonesia. The research results present the argumentation elements that appear the most up to the elements that are rarely found in argumentation essays. The research results are significant to be known by various groups, especially for teachers or lecturers, to write arguments. In addition to these argumentation elements, the researcher also describes the argumentation patterns used in students' argumentation essays.

Literature Review

Argumentation is critical and will never be separated from human life (Eemeren et al., 2014; Besnard & Hunter, 2008). Arguments usually emerge for anticipating disagreements. In everyday life, a person is always faced with opposition. As a mental reflex to deal with the opposition, a person will begin to weigh information and make the best choice. This mental process is sometimes carried out consciously or unconsciously.

Argumentation is a process to strengthen a claim through critical thinking skills by generating evidence and logical reasons. Apart from critical thinking skills, creative thinking skills, writing

attitudes, and motivation are also needed in writing (Sakkir, Rahman, & Salija, 2016; Aswadi, 2018; Syahrin, Dawud, Suwignyo, & Priyatni, 2019; Göçen, 2019; Sakkir, 2020). The argument can be explored using various theoretical perspectives. One theory often used in examining argumentation is the Toulmin theory known as Toulmin's Argument Pattern (TAP). (Erduran, Simon, & Osborne, 2004; Qin & Karabacak, 2010; Kunnan, 2010).

Several previous studies related to argumentation have been conducted by Qin & Karabacak (2010), Syerliana (2018), and Utomo, Ashadi, & Sarwanto (2019). Qin & Karabacak (2010) used Toulmin's argumentation structure to analyze 133 argumentation papers of second-year English Department students. The results showed that, on average, the papers had at least one claim supported by four data. However, the least amount is found in the claim counterargument elements, data counterargument, claim, and data rebuttal. Students fail to present sparring and rebuttal elements. Syerliana (2018) using the Toulmin Argument Pattern to determine the profile of students' argumentative abilities. The researcher analyzed thirty-five students' argumentation ability test results. The results showed that the students' argumentation skills were still low. The average claim score was 54%, data 38%, warrant 29%, backing 35%, and rebuttal 35%. Utomo, Ashadi, & Sarwanto (2019) researched to determine the profile of students' argumentation skills by measuring the arguments' quality. The research sample consisted of 90 students in grade eight junior high school. This study's results were that more than half of the students did not have a complete quality of argumentation. Researchers used the previous research above as a comparison in this study.

This study's theoretical perspective uses Toulmin's Argument Pattern (TAP) (Toulmin, 1958; 2003). From Toulmin's perspective, the argument consists of six elements: claim, data, warrant, backing, warrant, qualifier, and rebuttal. These elements are described as follows:

- Claim: a statement or conclusion that the owner of the argument believes.
- Data: the words presented to support the claim.

- Warrant: statements in the form of general principles that link claim and data.
- Backing: other things that are added to strengthen the warrant.
- Qualifier: used to provide restrictions on claims
- Rebuttal: the condition when the claim is the untrue and possible refutation of the claim.

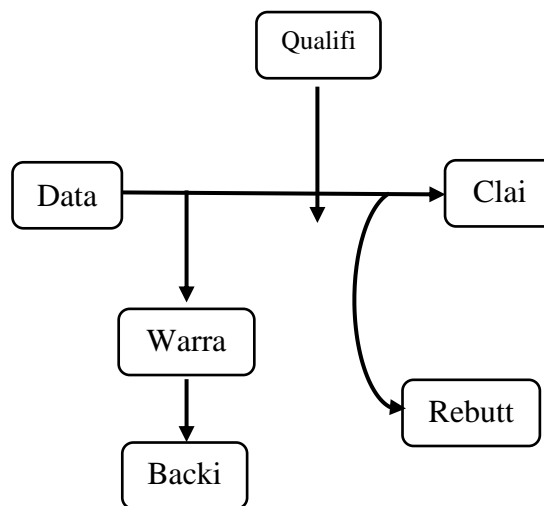


Figure 1. Toulmin's Argument Pattern (TAP)

Methods

This research uses a qualitative approach. A qualitative approach is used based on the characteristics of a descriptive, exploratory, and explanatory research study of a phenomenon. A qualitative approach is used to identify the elements making up the arguments and argumentation patterns used in student essays. This research is content analysis research. Content analysis is used to analyze the content of communication messages qualitatively as contained in the student's argumentation essay. Student writing is used as a source of data because students are already at the highest cognitive development level, namely at the formal operational stage. At that stage, ideally, someone no longer thinks with the help of concrete objects or events, but they already can think abstractly. The maturity of this cognitive level makes students at that age able to reason well. The argumentation essay used is an essay written by a first-year student at the Muhammadiyah University Sidenreng Rappang. The essay chosen

is an essay that is following the principles of essay deification. The data source is natural because the students themselves write an argumentative essay without any help from others. The research instrument used consisted of data collection guidelines and data analysis guidelines. The data collection guide contains data collection instructions and data collection formats. Data collection guidelines are a systematic way to do when collecting data. The collected data included in a data container format. The data collection format contains each research focus, indicators, data codes, and selected data. The data analysis guide contains each research focus, data code, selected data, and data descriptions.

Data Analysis

Data were collected using documentation techniques. The documentation technique is used by collecting documents in the form of argumentation essays. The argumentation essay is the result of a student writing on the discourse of moving the capital city. Students write argumentation essays on the provided sheets. The data that has been obtained were analyzed using an inductive qualitative content analysis model adapted from Mayring (2004). The data analysis steps used were (1) data coding, (2) grouping data according to categories, (3) abstracting categories,

(4) revising categories, (5) checking reliability, and (6) interpreting results. To describe the elements contained in the students' argumentation essays, the researcher adopted the Toulmin model.

Results and Discuss

This research study notes the importance of argument structure to support students' argumentation skills, as suggested by other researchers (for example, Erduran et al., 2004), and proposes that it should be considered as an integral part of the argumentative efforts used in composing a work, one of which is an essay. This study aims to describe the pattern of arguments in college students' argumentation essays using the Toulmin model. Specifically, this research describes two main things, namely (1) argument elements in student argumentation essays, (2) argument patterns in student argument essays. An overview of each of these points is described below.

Argument Elements in Student Argument Essays

To determine the elements of the argument, the researcher adopted the Toulmin model. Based on the data analysis of 35 student argumentation essays, the following results were obtained.

Table 1. Frequency of argument elements in students' argumentation essays

Data	TAP Components	Frequency	Percentage
35 Argumentation Essay	Claim	35	25%
	Data	/ 34	24%
	Ground		
	Warrant	20	14%
	Backing	24	17%
	Qualifier	22	15%
	Rebuttal	7	5%
Amount of data		142	100%

Table 1 shows that the argument components in the form of claims and ground are most often found in student argumentation essays. Meanwhile, the rebuttal argument component is the component that is rarely found. The data above shows that 35 student essays contain claims, 34 student essays contain ground, 20 student essays contain warrants, 24 student essays contain backing, 22 student essays contain qualifiers, and seven student essays contain rebuttal. Based on data analysis, argumentation elements based on Toulmin's Argument Pattern (TAP) have been seen as a whole in student argument essays. The TAP elements are described as follows. The first element in TAP is Claim. The claim is a statement, opinion, or conclusion generated based on the evidence or guarantee that has been expressed. An example of use claim elements in the student argumentation essay can be seen in the following quote.

- a) Moving the capital city is a strategic step that can be taken (APJ)
- b) Moving the capital to Kalimantan is not the right solution (SWY)

The topic discussed in the above quotation is about 'moving the capital'. According to opinion (a), relocating the capital city is a strategic step taken by the government. Meanwhile, data (b) explains that moving the capital city to Kalimantan is not the right solution. The two quotes contained in the student essay indicate a claim. The second element in TAP is Ground. The ground is the primary reasons expressed to support claims so that claims that have been expressed are strong and acceptable. Examples of using Ground elements in student argument essays can be seen in the following data.

- a) Kalimantan has a minimal risk of disasters, including floods, earthquakes, tsunamis, forest fires, volcanoes, and landslides. Apart from the risk of disasters, Jakarta is also too complicated, both in population, pollution, crime rates, and traffic jams in Jakarta (APJ).
- b) It takes a long time and requires a long process, besides that to carry out the initial development requires a considerable cost (SWY)

The above essay reveals the terrain's nature. Essay (a) explains why the capital city was transported as a strategic move to Kalimantan. The reasons put forward by APJ were made using a comparison pattern. Meanwhile, essay (b) explains moving the capital city to Kalimantan as an inappropriate step/ solution. The reasons put forward by (b) are carried out using an explanation pattern. The author widely uses the use of data / ground in the form of facts. The writer realizes the importance of facts for readers, especially the new facts that are obtained based on their analysis. Providing new factual knowledge is an important part that must be done as a writer's role to gain readers' trust. Another reason writers widely use data/ ground is the need for concrete reasons as the basis for their research.

The third element in TAP is Warrant. Warrants are general principles that appear as the basis for the validity of claims. The warrant is a bridge between Claim and Ground. Examples of using the Warrant element in student argument essays can be seen in the following example.

- a) Moving the capital is a matter of course, especially if you see other countries have done it. (WY)
- b) Moving to the capital city will be very costly. Meanwhile, at this time. The Indonesian state itself has a lot of debt (SR)

WY and SR's essays above reveal alternative ideas regarding relocating the capital city to Kalimantan. Both of these ideas make the data and claims presented to be acceptable/logical. The above data is included in the warrant element. The fourth element in TAP is backing. The backing is other things that are added in order to strengthen the claim further. Examples of using backing elements in student argument essays can be seen in the following example.

- a) According to BMKG Jakarta will be hit by a major earthquake in the next few years. This has made it better for some parties to agree with the discourse on relocating the national capital. Besides the Earthquake,

BMKG has also predicted that a tsunami will occur in the future. (NA)

- b) It is seen from the survey results that most of the public do not agree with the capital city development plan. The results of the survey were that 45.3% of respondents refused to move to their capital city. Moreover, only 40.7% of respondents approved moving to the capital city, while 14% said they did not know about moving to the capital city. (D)

The above quotes from NA and D essays provide additional information about moving the capital city to Kalimantan. This data can help strengthen the claim position. The above data is included in the backing element. The fifth element in TAP is a qualifier. Qualifiers are used to strengthen and limit claims in the form of words, phrases, or groups of words that indicate the degree of certainty or possible quality of a claim. An example of using the Qualifier element in a student argumentation essay can be seen in the following example.

- a) The relocation of the central city of the Indonesian government and the center of activities for state institutions to Kalimantan will give birth to new epicenters that approach most of the underdeveloped areas and outskirt areas that have never been effectively generated through development projects. (NN)
- b) If the capital is relocated, environmental pollution will occur, and Kalimantan animals will lose their homes and impact the extinction of native endemic Indonesian animals. (A)

The essay quoted above shows conflicting ideas. NN was the pro, while A was the contra. The NN essay quote above reveals the positive possibilities that will occur if the capital city is moved to Kalimantan. While A's essay shows more negative possibilities, it even seems sure what will happen if the capital city is moved to Kalimantan. NN expresses his ideas using an affirmation pattern. A expressed his ideas using a pattern of causality.

Both of these ideas can indicate the quality of the claims made. The above quote is included in the qualifier element. The sixth element in TAP is Rebuttal. The rebuttal is a denial or exception that has the potential to destroy the basis of truth. Examples of using Rebuttal elements in student argument essays can be seen in the following example.

- a) The government must think about disasters such as forest and land fires (Karhutla) that have often hit Kalimantan so that when they are moved, classic problems like this will continue to occur. So it is necessary to think about mitigation steps for forest and land fires in Kalimantan because it could disturb the government if that happens. (AH)
- b) DKI Jakarta's burden is too heavy because of its status as the center of government, business center, financial center, trade, and service center. As a result, Jakarta is known as the most congested city. Calling the main trigger of congestion is the uncontrolled population of vehicles. (A A)

The above quotation shows a strengthening of the argument / possible rebuttal or rebuttal to the discourse on moving the capital city to Kalimantan. AH expressed his view that the government needs to think about the fire problem that often hits Kalimantan. In this position, AH seems to deny his argument about taking sides in moving the capital city to Kalimantan. Meanwhile, AA expressed his view that the burden on DKI Jakarta was too heavy. In this position, NN shows the possibility of rebuttal or rebuttal, namely the preparation when the claim gets rebuttal to the claim's exclusion. The above quotation belongs to the rebuttal element.

The rebuttal elements in the student argumentation essays have the least frequency. However, the presence of rebuttal is a significant indicator in determining the quality of the argument. This is because rebuttal forces the author to evaluate the argument's validity and strength (Erduran, Simon, & Osborne; 2004). The research results on the element of this argument have similarities with the results of research

conducted by Qin & Karabacak (2010). Research Qin & Karabacak (2010) find students failing in presenting sparring and rebuttal elements. The rebuttal element in this study was found only seven times or only 5%. This number is the smallest compared to the other argument elements. The findings of this study are also in line with the research findings of Syerliana (2018). The study found that the claim element is the argument element with the largest percentage and the rebuttal element with the smallest percentage.

It is essential to identify each element in writing an argumentative essay. Identifying elements in argumentative writing can improve the quality of argumentation writing at various levels (Nussbaum & Kardash, 2005). This study's results provide input to teachers and lecturers in teaching writing

arguments to further explain, especially on the rebuttal elements. By understanding all the elements of argumentation, the quality of argumentation writing can improve.

Argument Pattern in Student's Argument Essay

Based on the data analysis, thirteen variants of argument patterns were found in the student argumentation essays. The findings of argument patterns vary widely from simple patterns to the most complex ones based on Toulmin's Argument Pattern (TAP). The argument patterns include CD, CDW, CDB, CDWB, CDWQ, CDBQ, CDQ, CDWBQ, CDWBR, CDWQR, CDBR, CDBQR, and CDWBQR. The argument pattern is presented in table 2.

Table 2. The pattern of arguments in students' argumentation essays

Data	Argument Pattern	Frequency	Percentage
35 Argumentation Essay	CD	5	14%
	CDW	1	3%
	CDB	2	6%
	CDWB	4	11%
	CDWQ	1	3%
	CDBQ	3	9%
	CDQ	2	6%
	CDWBQ	10	29%
	CDWBR	1	3%
	CDWQR	2	6%
	CDBR	1	3%
	CDBQR	1	3%
	CDWBQR	2	6%
Amount of data		35	100%

Table 2 shows that the argument pattern that is mostly found in student argumentation essays is the CDWBQ pattern argument. This pattern was found ten times (29%). Table 2 also shows two student essays with a CDWBQR pattern or essays in which six argument elements are found based on Toulmin's Argument Pattern. However, the percentage of essays that have six argument elements is still low, namely 6%. The following

describes the pattern of arguments that emerged based on the research results.

CD argument pattern (Claim-Data)

CD argument pattern is the most basic argument pattern in the formation of arguments. The pattern only contains claim elements and data elements. There are five (APJ, AJ, IQ, J, and MR) or 14% of students' argumentation essays using this pattern. In an essay that uses this pattern, the author raises

a statement, a conclusion that serves as a claim. Furthermore, the essay writer comes up with a sentence containing the primary reasons to support the claim stated. The data element comes from the knowledge that students have related to the essay topic. The claim is not always in front of data. Positions can change, namely when the author starts with fundamental reasons first (data) and then raises a statement or conclusion.

CDW (Claim-Data-Warrant) argument pattern

In this CDW argument pattern, the essay writer not only raises the Claim and Data argument elements the writer also adds the Warrant element. The warrant has a function as a liaison between Claim and Data. There is one (SR) or 3% argumentation essay that uses this pattern.

CDWB argument pattern (Claim-Data-Warrant-Backing)

In the argument pattern, CDWB and CDB are argument patterns, both of which have Backing elements. In the CDB pattern, the essay writer does not bring up the Warrant element in his argumentation essay. There were two essays (NSS and MY) that had a CDB pattern (6%), and four essays (D, EM, WY, and YA) had a CDWB pattern (11%). The backings are other things added to strengthen the warrant further.

CDWBQ argument pattern (Claim-Data-Warrant-Backing-Qualifier)

There are four variants of argument patterns that have Qualifier elements in student argumentation essays, namely CDWQ, CDBQ, CDQ, and CDWBQ. The CDWQ pattern variates the argument pattern that has raised the Qualifier element but not the Backing element. There are only one data (NF) or 3% of student argumentation essays using this pattern. The CDBQ pattern variates the argument pattern that has created a Qualifier element but does not create a Warrant element. There are three data (FA, ME, and NN) or 9% of students' argumentation essays using this pattern. The CDQ pattern variates the argument pattern that has raised Qualifier elements but does not bring up Warrant and

Backing elements simultaneously. There are two data (MI and ASN) or 6% student argument essays that use this pattern. The CDWBQ variant is the complete variant of the four variants. There are ten data (A, ES, F, HH, LWA, NA, NFD, NQ, N, and RR) or 29% of students' argumentation essays using this pattern. The essay writer raises qualifiers to limit claims.

CDWBQR argument pattern (Claim-Data-Warrant-Backing-Qualifier-Rebuttal)

There are five variants of argument patterns with a Rebuttal element in student argument essays, CDWBR, CDWQR, CDBR, CDBQR, and CDWBQR. PatternCDWBR is a variant of the argument pattern that has raised the Rebuttal element but not the Qualifier element. There are only one data (DA) or 3% argumentation essays of students using this pattern. PatternCDWQR is a variant of argument pattern which has a Rebuttal element but not a Backing element. There are two data (AAF and H) or 6% of students' argumentation essays using this pattern. PatternCDBR is a variant of the argument pattern that has created the Rebuttal element but does not simultaneously bring up the Warrant and Qualifier elements. There are only one data (AH) or 3% argumentation essays of students using this pattern. PatternCDBQR is a variant of the argument pattern that has created Rebuttal elements but does not create Warrant elements. There are only one data (SWY) or 3% of student argumentation essays using this pattern. VariantCDWBQR is the complete variant of the five variants. However, only two data (Fj and Nal) or 6% of students' argumentation essays use this pattern. The essay writer raises qualifiers to limit claims.

The argument patterns found in students' argumentation essays are very diverse. Namely, there are thirteen argument patterns. That number is more than the argument pattern in the study Abduh, Sastromiharjo, & Anshori (2019), namely as many as nine argumentation patterns. This could be due to differences in the level of the study sample. Abduh, Sastromiharjo, & Anshori (2019) research high schools while researching tertiary institutions.

The variety of patterns in student argumentation essays is based on many factors, for example, experience or general knowledge gained. Berland & Hammer (2012) states that a person can argue through his acquisition of understanding phenomena by expressing what he understands and trying to convince people to accept his ideas, supported by sufficient knowledge and the ability to think critically. The author agrees with this view that argument components reflect the author's knowledge, but not all arguments can have complete components/elements. The argument will be wrong by forcing the argument to have complete components/elements without considering each component's relevance. As stated by Toulmin, Rieke, & Janik (1984), One of the essential steps in assessing an argument's strength is to recognize the relevance or irrelevance of the argument component.

Conclusion (Times New Roman, bold, 12)

Acknowledgement

The research was supported by Universitas Muhammadiyah Sidenreng Rappang (UMS Rappang), Indonesia, as the first researcher for academic support. We would also like to show our gratitude to the Indonesia Education and Literature Department students to share their perceptions and knowledge for this study. The researchers addressed many thanks to LPDP that funded this article to join the international journal. The first researcher also addresses her appreciation to her supervisor Prof. Dr. Ah. Rofi'uddin, M.Pd., Prof. Dr. Dawud, M. Pd., and Dr. Imam Agus Basuki, M.Pd. for their guidance and encouragement.

References

- Abduh, N. K., Sastromiharjo, A., & Anshori, D. S. (2019). Pola Argumentasi pada Genre Teks Eksposisi Karangan Siswa SMA. *RETORIKA: Jurnal Bahasa, Sastra, Dan Pengajarannya*, 12(1), 71–84. <https://doi.org/10.26858/retorika.v12i1.7372>
- Arslan, R. S. (2013). An integrated approach to enhancing prospective English language teachers' writing skills. *Journal of Language and Linguistic Studies*, 9(2), 1–17.
- This study has shown the elements of argument and argumentation patterns used by first-year students in writing argumentation essays. The argument element most often used by students is the claim element. The element most rarely used by the rebuttal element. Teachers and lecturers to write arguments are expected to provide more explanation, especially on rebuttal elements. The argument patterns found in this study were thirteen variants, including CD, CDW, CDB, CDWB, CDWQ, CDBQ, CDQ, CDWBQ, CDWBR, CDWQR, CDBR, CDBQR, and CDWBQR. The most widely used pattern is the CDWBQ pattern. Student argumentation essays using this pattern 10 (ten) times or 29%. There is already a student argumentation essay that uses the complete pattern, namely the CDWBQR pattern. However, only 2 (two) essays used this pattern or 6%. This number needs to be increased by providing further explanation of the elements that make up the argumentation writing. Thus the quality of argumentation writing can be improved. <https://doi.org/10.17263/jlls.99884>
- Aswadi. (2018). Mengulik Akar Kritis dalam Analisis Wacana Kritis dan Implementasinya Terhadap Teks Berita. *Lensa: Kajian Kebahasaan, Kesusastraan, Dan Budaya*, 8(2), 176–188.
- Berland, L. K., & Hammer, D. (2012). tea.20446 Framing for Scientific Argumentation.pdf. *Journal of Research in Science Teaching*, 49(1), 68–94. <https://doi.org/DOI 10.1002/tea.20446>
- Besnard, P., & Hunter, A. (2008). *Elements of Argumentation*. Massachusetts London, England: MIT Press Cambridge.
- Chen, Y. C., Hand, B., & Park, S. (2016). Examining Elementary Students' Development of Oral and Written Argumentation Practices Through Argument-Based Inquiry. *Science and Education*, 25(3–4), 277–320. <https://doi.org/10.1007/s11191-016-9811-0>
- Conner, A. M., Singletary, L. M., Smith, R. C., Wagner, P. A., & Francisco, R. T. (2014). Teacher support for collective argumentation: A framework for examining how teachers support students' engagement

- in mathematical activities. *Educational Studies in Mathematics*, 86(3), 401–429. <https://doi.org/10.1007/s10649-014-9532-8>
- Eemeren, F. H. van, Garssen, B., Krabbe, E. C. W., Henkemans, A. F. S., Verheij, B., & Wagemans, J. H. M. (2014). *Handbook of Argumentation Theory*. New York London: Springer Dordrecht Heidelberg.
- Erduran, S., Simon, S., & Osborne, J. (2004). Enhancing the quality of argumentation in school science. *Journal of Research in Science Teaching*, 41(10), 994–1020. <https://doi.org/10.1002/tea.20035>
- Fan, Y. (2020). Argument structure representation: Formation of serial verb constructions in Standard Mandarin Chinese. *Lingua*, (2019), 102962. <https://doi.org/10.1016/j.lingua.2020.102962>
- Göçen, G. (2019). The effect of creative writing activities on elementary school students' creative writing achievement, writing attitude and motivation*. *Journal of Language and Linguistic Studies*, 15(3), 1032–1044. <https://doi.org/10.17263/jlls.631547>
- Hirose, K. (2003). Comparing L1 and L2 organizational patterns in the argumentative writing of Japanese EFL students. *Journal of Second Language Writing*, 12(2), 181–209. [https://doi.org/10.1016/S1060-3743\(03\)00015-8](https://doi.org/10.1016/S1060-3743(03)00015-8)
- Knudson, R. E. (1992). The development of written argumentation: An analysis and comparison of argumentative writing at four grade levels. Knudson, R. E. (1992). The development of written argumentation: An analysis and comparison of argumentative writing at four grade levels. C. *Child Study Journal*.
- Kunnan, A. J. (2010). Test fairness and toulmin's argument structure. *Language Testing*, 27(2), 183–189. <https://doi.org/10.1177/0265532209349468>
- Lubishtani, M. (2019). Contrastive analysis of the semantic relations of connectors in argumentative texts in English and Albanian. *Journal of Language and Linguistic Studies*, 15(2), 508–519. <https://doi.org/10.17263/jlls.586175>
- Mayring, P. (2004). Qualitative content analysis. *A Companion to Qualitative Research*, 1(2004), 159–176.
- McNeill, K. L., & Knight, A. M. (2013). Teachers' pedagogical content knowledge of scientific argumentation: The impact of professional development on K-12 teachers. *Science Education*, 97(6), 936–972. <https://doi.org/10.1002/sce.21081>
- McNeill, K. L., & Pimentel, D. S. (2010). Scientific discourse in three urban classrooms: The role of the teacher in engaging high school students in argumentation. *Science Education*, 94(2), 203–229. <https://doi.org/10.1002/sce.20364>
- Newell, G. E., Beach, R., Smith, J., & Vanderheide, J. (2011). Review of research: Teaching and learning argumentative reading and writing: A review of research. *Reading Research Quarterly*, 46(3), 273–304. <https://doi.org/10.1598/RRQ.46.3.4>
- Nussbaum, E. M., Dove, I. J., Slife, N., Kardash, C. A. M., Turgut, R., & Vallett, D. (2019). Using Critical Questions to Evaluate Written and Oral Arguments in an Undergraduate General Education Seminar: a Quasi-experimental study. *Reading and Writing*, 32(6), 1531–1552. <https://doi.org/10.1007/s11145-018-9848-3>
- Nussbaum, E. M., & Kardash, C. M. (2005). The effects of goal instructions and text on the generation of counterarguments during writing. *Journal of Educational Psychology*, 97(2), 157–169. <https://doi.org/10.1037/0022-0663.97.2.157>
- Qin, J., & Karabacak, E. (2010). The analysis of Toulmin elements in Chinese EFL university argumentative writing. *System*, 38(3), 444–456. <https://doi.org/10.1016/j.system.2010.06.012>
- Rodríguez, J., Correa, N., & Ceballos, E. (2016). Multiperspectivistic management of discourse in oral argumentation in academic settings. *Infancia y Aprendizaje / Journal for*

- Study of Education and Development*, 39(3), 436–465.
<https://doi.org/10.1080/02103702.2016.1189121>
- Sakkir, G., Rahman, Q., & Salija, K. (2016). Students' Perception on Social Media in Writing Class at STKIP Muhammadiyah Rappang, Indonesia. *International Journal of English Linguistics*, 6(3), 170.
<https://doi.org/10.5539/ijel.v6n3p170>
- Sampson, V., & Blanchard, M. R. (2012). Science teachers and scientific argumentation: Trends in views and practice. *Journal of Research in Science Teaching*, 49(9), 1122–1148.
<https://doi.org/10.1002/tea.21037>
- Song, Y., & Ferretti, R. P. (2013). Teaching critical questions about argumentation through the revising process: Effects of strategy instruction on college students' argumentative essays. *Reading and Writing*, 26(1), 67–90.
<https://doi.org/10.1007/s11145-012-9381-8>
- Syahrin, A., Dawud, Suwignyo, H., & Priyatni, E. T. (2019). Creative thinking patterns in student's scientific works. *Eurasian Journal of Educational Research*, 2019(81), 21–36.
<https://doi.org/10.14689/ejer.2019.81.2>
- Syerliana, L. (2018). Argumentation skill profile using "toulmin Argumentation Pattern" analysis of high school student at Subang on topic hydrostatic pressure. *Journal of Physics: Conference Series*, Vol. 1013.
<https://doi.org/10.1088/1742-6596/1013/1/012031>
- Tajabadi, A., Dowlatabadi, H., & Mehri, E. (2014). Grice's Cooperative Maxims in Oral Arguments: The Case of Dispute Settlement Councils in Iran. *Procedia - Social and Behavioral Sciences*, 98(2014), 1859–1865.
<https://doi.org/10.1016/j.sbspro.2014.03.616>
- Toulmin, S. E. (1958). *The Uses of Argument*. Cambridge: Cambridge University Press.
- Toulmin, S. E. (2003). The uses of argument: Updated edition. In *The Uses of Argument: Updated Edition*.
<https://doi.org/10.1017/CBO9780511840005>
- Toulmin, S. E., Rieke, R. D., & Janik, A. (1984). *An Introduction to Reasoning*. New York: Macmillan Publishing. Co. Inc.
- Tsai, P. S., & Tsai, C. C. (2013). College students' experience of online argumentation: Conceptions, approaches and the conditions of using question prompts. *Internet and Higher Education*, 17(1), 38–47.
<https://doi.org/10.1016/j.iheduc.2012.10.001>
- Utomo, Y. S., Ashadi, & Sarwanto. (2019). Argumentation Skills Profile on 8th Grade Students using Toulmin's Argument Pattern on Controversial Topic. *Journal of Physics: Conference Series*, 1233(1).
<https://doi.org/10.1088/1742-6596/1233/1/012095>
- Venville, G. J., & Dawson, V. M. (2010). The impact of a classroom intervention on Grade 10 students' argumentation skills, informal reasoning, and conceptual understanding of science. *Journal of Research in Science Teaching*, 47(8), 952–977.
<https://doi.org/10.1002/tea.20358>
- Wingate, U. (2012). "Argument!" helping students understand what essay writing is about. *Journal of English for Academic Purposes*, 11(2), 145–154.
<https://doi.org/10.1016/j.jeap.2011.11.001>