ARGUMENTATION PATTERNS OF TOULMIN STUDENTS DURING ONLINE LECTURES IN THE PANDEMIC

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Abstract

Student argumentation skills are considered weak during online lectures. The Toulmin Argumentation Model is an excellent model in analyzing argumentation discourse in the Science Classroom. This study aims to describe Toulmin's argumentation patterns during online lectures during the Covid-19 Pandemic. The research method used is a qualitative descriptive method. Data collection techniques used in the form of an open questionnaire. Respondents used in this study were 50 samples. The results showed that the argumentation pattern was divided into 2 categories namely, (1) Category Four Elements and (2) Category Five Elements. The Four Elements category is divided into 2 patterns, namely the C-G-W-B Pattern and the G-C-M-W Pattern. In the CGWB Pattern, the argumentation elements used are a claim (position statement), ground (data or facts), warrant (guarantee), and backing (support), while in the GCMW Pattern the argumentation elements used are ground (data or facts), claim (position statement), Capital Qualifier, and warrant. The Five Elements category forms the G-C-W-B-Pc Pattern. In the G-C-W-B-Pc Pattern, the argumentation elements used are grounds (data or facts), claims (position statements), warrant (s), backing (support), and possible rebuttal (exceptions). In the case of the five-element category, the argumentation pattern does not use a Capital qualifier.

Keywords: Toulmin's Argumentations, Online Lecture, Pandemic, Patterns

Abstrak

Keterampilan argumentasi mahasiswa dinilai masih lemah selama perkuliahan *online*. Model argumentasi toulmin merupakan model yang sangat baik dalam menganalisis wacana argumentasi di ruang Kelas Sains. Penelitian ini bertujuan untuk mendeskripsikan pola argumentasi toulmin selama perkuliahan *online* di masa Pandemi *Covid-19*. Metode

penelitian yang digunakan adalah metode kualitatif-deskriptif. Teknik pengambilan data yang digunakan berupa angket terbuka. Responden yang digunakan dalam penelitian ini sebanyak 50 sampel. Hasil penelitian menunjukkan bahwa pola argumentasi terbagi menjadi 2 kategori yakni, (1) Kategori Empat Elemen dan (2) Kategori Lima Elemen. Pada kategori Empat Elemen dibagi menjadi 2 pola, yakni Pola C-G-W-B dan Pola G-C-M-W. Pada Pola C-G-W-B elemen argumentasi yang digunakan adalah *claim* (pernyataan posisi), *ground* (data atau fakta), *warrant* (jaminan), dan *backing* (dukungan). Sedangkap pada Pola G-C-M-W elemen argumentasi yang digunakan adalah *ground* (data atau fakta), *claim* (pernyataan posisi), *Modal Qualifier* (Modalitas), dan *warrant* (jaminan). Pada kategori Lima Elemen membentuk pola G-C-W-B-Pc. Pada pola G-C-W-B-Pc, elemen argumentasi yang digunakan adalah *grounds* (data atau fakta), *claim* (pernyataan posisi), *warrant* (jaminan), *backing* (dukungan), dan *possible rebuttal* (pengecualian). Pada kasus kategori lima elemen, pola argumentasi tidak menggunakan *modal qualifier* (Modalitas).

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1. Introduction

The Corona Virus Disease-19 (Covid-19) pandemic has caused global public health emergencies with rapid spread and deadly infection power (Wu and McGoogan 2020). The outbreak that initially only had an impact on the health crisis in the Wuhan area of China now has a multidimensional impact in various countries. The fight of the global community against this disease is thought to be still very long (Radha et al. 2020). Epidemiologists are still studying the characteristics of Covid-19 so that an appropriate vaccine is immediately made to deal with this virus (Shoenfeld 2020). The Covid-19 pandemic caused a change in the landscape of various sectors of a country. One of the affected sectors is the education sector. In Indonesia, the Covid-19 Pandemic caused a fundamental change in the education system. Learning interactions that began as dominated by face-to-face learning in the classroom are now turning to online learning. Online learning is now also simultaneously carried out at the level of Higher Education. Not only students who study, but lecturers are also required to adapt quickly to conduct new internet-based learning interactions. The dramatic change in online learning interactions implies opening the true face of higher education in Indonesia. Online distance education in the middle of the Covid-19 Pandemic encountered many obstacles. The gap factor of various parents' socio-economic conditions, lecturer technology literacy, and network infrastructure gaps are the main obstacles in the online interaction process in online lectures.

Many online lectures use the focus group discussion method or Focus Group Discussion (FGD). Focus Group Discussion is a process of gathering information on a specific problem that is very specific through group discussion (Gutama et al. 2014). According to Rahimi et al (2019), Focus Group Discussion is a process of gathering information about a specific problem that is very specific. By providing online learning with the Focus Group Discussion technique it is hoped that it can help students improve their understanding of concepts and reasoning in the teaching taught by the Lecturer. Understanding of concepts and reasoning can be seen from the form of a person's arguments expressed in writing or verbally (Maulyda et al. 2020). According to Handayani (2015), the application of Toulmin's Argumentation Model application in Kremling (2018) is very good as a reference in analysing argumentation discourse in science classrooms.

During lectures conducted online during the Covid-19 Pandemic, students' argumentation skills were considered weak. Difficulties in developing argumentation skills are caused by weak students' critical thinking skills and the lack of innovation and quality of online learning. This is supported by the results of previous research conducted by Rybka (2015) which states that prospective teacher students are still lacking in argumentation because understanding the concept of student-teacher candidates is still lacking. Researchers have also conducted a preliminary study of the low desire of students to give arguments. This initial research was conducted by giving a common problem to 50 students and then asked to provide comments or solutions (arguments) to the problem. Problems are given via WhatsApp (WA) Group, and students are asked to comment on the Group so that researchers more easily record student arguments. Following are the results of tabulating data on the number of students who provide comments or arguments:

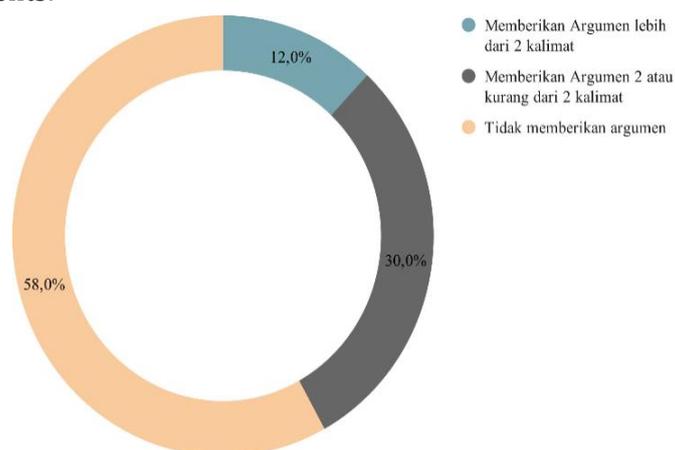**Figure 1 Tabulate the Number of Students Who Gave Arguments**

Based on Figure 1, it can be seen that the number of students who give arguments to the problem given is very small. Out of 50 students, only 12% or 6 students gave arguments of more

than 2 sentences. Students in this group give their arguments and the basis of their arguments. Although after observing, the arguments from students are not strong enough and have no solid foundation. Nevertheless, this shows that students have the will to argue. In the next group, there were 30% or 15 students who gave arguments of less than 2 sentences. Students in this group tend to only give brief arguments without any basis or reason for their arguments. Students in this group are less serious in arguing about a problem. The last group was 58% or 29 students who did not give the slightest argument. Based on this explanation, it can be concluded that there are still many students who are reluctant to give an argument on a problem.

Based on the description above, researchers are interested in describing the pattern of student arguments based on the Toulmin's argumentation element indicator. Thus the purpose of this study is to describe Toulmin's argumentation patterns during online lectures. The researcher hopes that the results of this study can add to the insight of educators, especially lecturers, to understand the patterns of argumentation given by students during the lecture process.

2. Metod

To achieve the research objectives that have been described, researchers use a qualitative-descriptive approach. According to Creswell (2012), qualitative data is an analysis of data that describes phenomena found in the field. The data collection method used in this study is the provision of open questionnaires. The open questionnaire that is used in the form of Google Form containing general problems. The general problem chosen is learning in schools during a pandemic, where learning is not permitted in schools. This general problem is what is followed by open-ended questions as an argument. Google forms platform selection because it sees the efficiency of data collection and COVID-19 pandemic conditions that do not allow for direct data collection (face to face).

In accordance with the research objectives, the research subjects were 50 students at the Universitas Mataram. The subject selection criteria are fulfilling; (1) Minimum is in semester V in 2020; (2) Have conducted online lectures for a minimum of 8 meetings (2 months); and (3) Students who have internet access to fill instruments in the form of Google form. Data collected from the data are then analyzed descriptively, to concatenate and describe the patterns of student argumentation in accordance with the indicators of Toulmin's argumentation elements. Table 1 below is an indicator description according to Toulmin in (Rybka 2015).

Table 1 Toulmin's Argumentation Elements

Argumentation Element	Description Argumentation Element	Identification Question
Claim (C)	A Position Statement is a statement that contains a person's opinion or position on an issue	What is actually claimed? What is supported? Where is the position in this issue or topic?
Ground (G)	An argument can be in the form of experimental observations, general knowledge, statistical data, and a person's testimony	What is the basis for the argument?
Warrant (W)	A bridge that connects position statements with data or facts	What basis is used to reason relevant and factual?
Backing (B)	Supporting data or statements to strengthen the argument	What can support and strengthen the proposed guarantee?
Capital Qualifier (M)	Disclosure of the speaker's attitude that shows the degree of certainty of an argument	What words or phrases indicate certainty in the proposed position statement?
Exception (Pc)	Conditions that allow for the emergence of rejection or refutation in the arguments given	What factors can drop this argument? What possibilities might oppose this argument?

The research procedure was started by giving an open questionnaire link in the form of Google form to 50 research subjects. The research subjects were then given 20 minutes to give their arguments for the given problem. After the researcher gets the data collected automatically on the Google form platform, the researcher tabulates the data and groups the argumentation data which has the same argumentation pattern. After that, the researchers chose 1 subject (1 argumentation) representing each group.

3. Result and Discussion

Based on the results of a preliminary study conducted previously, there are 6 subjects who provide arguments for a given problem. After analyzing the results of the arguments given, the researcher found differences in the patterns of argumentation among the several arguments of the research subjects. The subject's argumentation pattern is divided into 2 categories namely, (1) Category Four Elements and (2) Category Five Elements. After that, each subject is chosen to be discussed in-depth and because each subject already represents each category.

3.1 The Four Elements Category (C-G-W-B)

In this category, the research subjects used 4 elements of Toulmin's argumentation to express their ideas. The argumentation elements used are a claim (statement of position), ground (data or facts), warrant (guarantee), and backing (support). The following is the scheme of the

subject's argumentation pattern towards the problem of online learning in schools during the COVID-19 pandemic in this category:
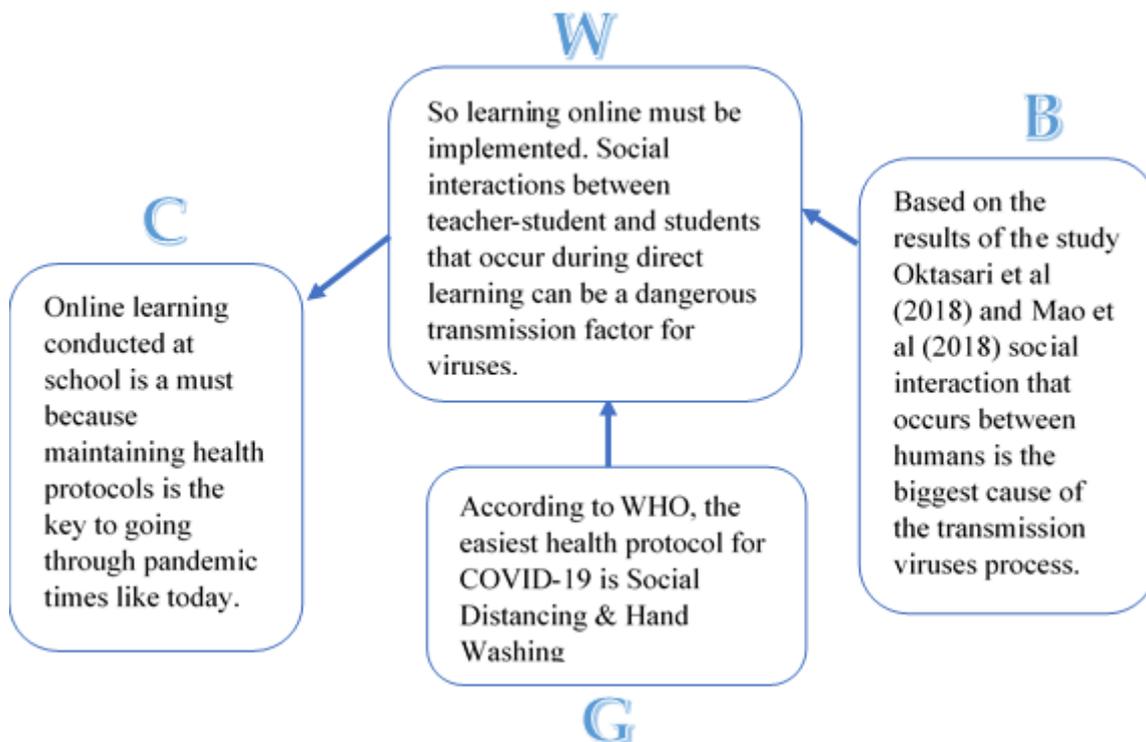

Figure 2 Schematic Argumentation Pattern 4 Elements (C-G-W-B)

The chart above only consists of four elements, namely elements of a statement (claim), data or facts (ground), guarantees (warrant), and support (backing). How to identify the elements of a position statement can be asked questions such as "what is the position statement of the author?" and the answer is "Online learning done at school is a must because maintaining health protocols is the key to going through the pandemic times like now". The position statement (claim) has been determined, the next step is to determine the data or facts (ground), namely by asking questions such as "what is the evidence or basis that supports the position statement?" and the answer is "According to WHO, the easiest health protocol COVID-19 to do is Social Distancing and Hand Washing".

Data or facts (ground) and position statement (claim) is found, then the next step is to link them using a guarantee (Almeida and Malheiro 2018). Guarantees are determined through a question, which is "what is the guarantee that confirms the claim and connects the claim with the grounds?" and the answer is "So that learning done online must be implemented. Social interactions between teacher-students and students that occur during direct learning can be a factor in the transmission of harmful viruses ". A guarantee will be strong when accompanied by backing. And to determine support (backing) was asked a question "what is the background of the warrant?", and the answer was "Based on the results of the research Oktasari et al. (2018);

and (Mao et al. (2018) social interaction that occurs between humans is the biggest cause of the virus transmission process". The chart above is the pattern of the C-G-W-B argument. In accordance with Toulmin's opinion in De Villiers (2010), there are four patterns of argument used namely, patterned data arguments or position statements (claims), data or facts (ground), then as a bridge that connects data or facts (ground) with position statements (claim) is a guarantee (warrant), and support (backing) as a support of the guarantee (warrant).

3.2   The Four Elements Category (G-C-M-W)

In this category, the research subjects used 4 elements of Toulmin's argumentation to express their ideas. The argumentation elements used are ground (data or facts), claim (position statement), Capital Qualifier, and warrant. The following is the scheme of the subject's argumentation pattern towards the problem of online learning in schools during the COVID-19 pandemic in this category:
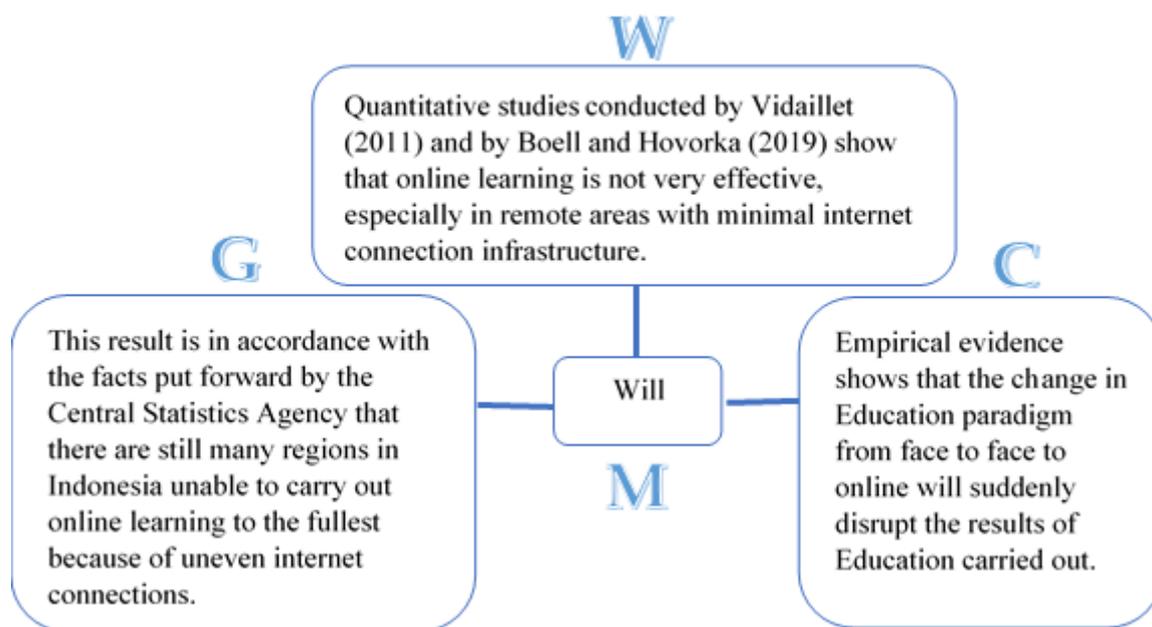
W

Quantitative studies conducted by Vidaillet (2011) and by Boell and Hovorka (2019) show that online learning is not very effective, especially in remote areas with minimal internet connection infrastructure.

G

This result is in accordance with the facts put forward by the Central Statistics Agency that there are still many regions in Indonesia unable to carry out online learning to the fullest because of uneven internet connections.

Will

M

C

Empirical evidence shows that the change in Education paradigm from face to face to online will suddenly disrupt the results of Education carried out.

Figure 3 Schematic Argument Pattern 4 Elements (G-C-M-W)

The chart above only consists of four elements, namely the ground element (data or facts), claim (position statement), a capital qualifier (modality), warranty (guarantee). How to identify the elements of a position statement can be asked questions such as "what is the position statement of the author?" and the answer is "Empirical evidence shows that the change in Education paradigm from face to face to online will suddenly disrupt the results of Education carried out". The position statement (claim) has been determined, the next step is to determine the data or facts (ground), namely by asking questions such as "what is the evidence or basis that

supports the position statement?" and the answer is "These results are in accordance with the facts put forward by the Central Statistics Agency that there are still many regions in Indonesia unable to carry out online learning to the maximum because of uneven internet connections".

Data or facts (ground) and position statements (claims) are found, then the next step is to connect them using a guarantee (warrant). Guarantees are determined through a question, which is "what is the guarantee that confirms the claim and connects the claim with the grounds?" and the answer is "Quantitative studies conducted by Vidaillet (2011) and by Boell and Hovorka (2019) show that the learning process carried out online is less effective to do, especially in regions ". Elements of the argument such as a statement of position (claim), data or facts (ground), and guarantees (warrant) have been found, then a question is asked to obtain modality (capital qualifiers), namely: "what words or phrases indicate the degree of certainty in the position statement (claim)? ``The answer is: "Will". The chart above is a G-C-M-W argument pattern. In accordance with the opinion of Toulmin in Almeida and Malheiro (2018), there are four patterns of argument used. The pattern of argument used as in the chart above consists of data or facts (ground), a statement of position (claim), then as a bridge connecting data or facts (ground) with a statement of position (claim) is a guarantee (warrant), and to strengthen statement of position it is necessary to have a modality (capital qualifier)

3.3   The Five Elements Category

This grouping is based on a pattern of arguments consisting of five elements, namely claim, ground, warrant, backing, and capital qualifier. The C-G-B-W-M pattern is a C-G-B-W pattern that is strengthened with a degree of certainty. The pattern starts from a statement of position (claim) that is supported by data or facts (ground). Claims and ground are connected to a warrant which has been attached by backing. To confirm this argument or show the availability of evidence and support that has been shown, the writer states with certain words or phrases called modals qualifier (Abduh et al. 2019). The capital qualifier is a marker of the degree of strength of an argument from strong to weak (Hewison and Kuras 2005; Heitmann et al. 2017). However, in the case of the arguments given by the subject, the subject does not use the Capital qualifier but uses an exception. The following arguments consist of five basic elements of argumentation, namely ground (data or facts), claim (position statement), warrant (backing), backing (support), and possible rebuttal (exception). The following is the scheme of the subject's argumentation pattern towards the problem of online learning in schools during the COVID-19 pandemic in this category:
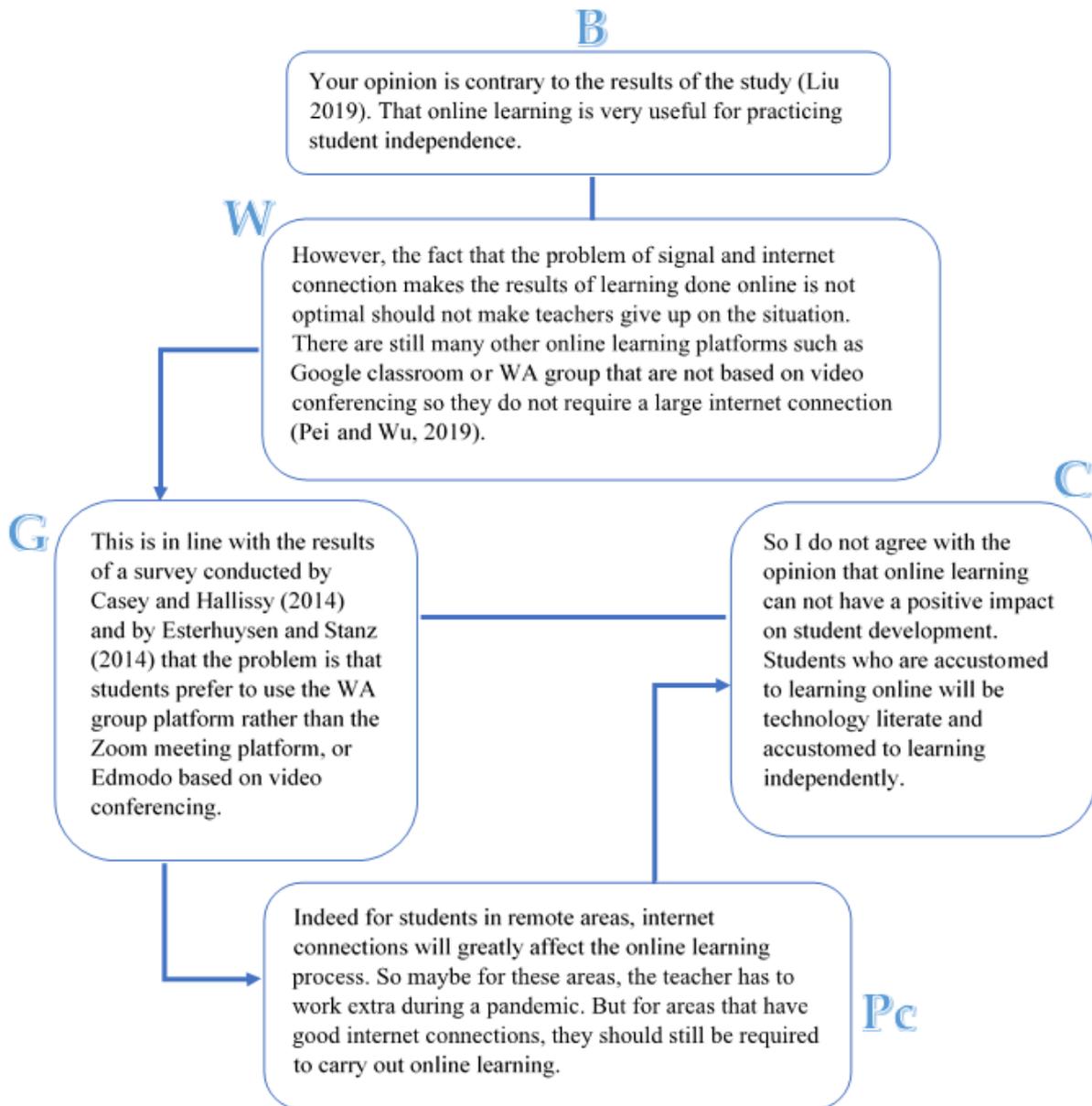
B

Your opinion is contrary to the results of the study (Liu 2019). That online learning is very useful for practicing student independence.

W

However, the fact that the problem of signal and internet connection makes the results of learning done online is not optimal should not make teachers give up on the situation. There are still many other online learning platforms such as Google classroom or WA group that are not based on video conferencing so they do not require a large internet connection (Pei and Wu, 2019).

G

This is in line with the results of a survey conducted by Casey and Hallissy (2014) and by Esterhuysen and Stanz (2014) that the problem is that students prefer to use the WA group platform rather than the Zoom meeting platform, or Edmodo based on video conferencing.

C

So I do not agree with the opinion that online learning can not have a positive impact on student development. Students who are accustomed to learning online will be technology literate and accustomed to learning independently.

Indeed for students in remote areas, internet connections will greatly affect the online learning process. So maybe for these areas, the teacher has to work extra during a pandemic. But for areas that have good internet connections, they should still be required to carry out online learning.

Pc

Figure 4 Element Argumentation Scheme (G-C-W-B-Pc)

The chart above only consists of five elements, namely data or fact elements (grounds), position statements (claims), guarantees (warrant), support (backing), and exceptions (possible rebuttal). How to identify the elements of a position statement can be asked questions such as "what is the position statement of the author?" and the answer is "So I disagree with the opinion that online learning cannot have a positive impact on student development. Students who are accustomed to learning online will be technology literate and accustomed to learning independently". The position statement (claim) has been determined, the next step is to determine the data or facts (ground), namely by asking questions such as "what is the evidence or basis that supports the position statement?" and the answer is "This is in line with the results of a survey conducted by Casey and Hallissy (2014) and by Esterhuysen and Stanz (2014) that

the problem students prefer to use the WA group platform rather than the Zoom Meeting platform, or Edmodo based on video conferencing".

Data or facts (ground) and position statement (claim) is found, then the next step is to connect them using a guarantee (warrant). Guarantees are determined through a question, which is "what is the guarantee that corroborates claims and connects claims with the ground?" and the answer is "Despite the fact that the problem of signal and internet connection makes the results of learning done online are not optimal should not make teachers give up on the situation. There are still many other online learning platforms such as Google classroom or WA group that are not based on video conferencing so they do not require a large internet connection (Pei and Wu 2019) ". A guarantee will be strong when accompanied by backing. And to determine support (backing) asked a question "what is the background of the warrant?", and the answer is "Your opinion is contrary to the results of the study (Liu 2019). Online learning is very useful to train students' independence.

Argument elements such as position statement (claim) have been found, data or facts (ground), warrant (guarantee), support (backing) have been found so to get an exception (possible rebuttals), namely; "What factors or conditions can drop a position statement (claim)? "Indeed, for students in remote areas, an internet connection will greatly affect the learning process online. So maybe for these areas, the teacher has to work extra during a pandemic. But for areas that have good internet connections, they should still be required to carry out online learning. "The chart above is the C-G-W-B-Pc argument pattern. In accordance with Toulmin's opinion, in Goldstein et al. (2009) there are five patterns of argument used. The pattern of arguments used as in the chart above consists of data or facts (grounds), position statements (claims), then as a bridge that connects data or facts (grounds) with position statements (claims) are guarantees (warrant), support (backing)) as a supporter of warranties, and possible rebuttals used to disprove a position statement (claim).

4. Conclusion

Based on the explanation of the results of research and discussion, it can be concluded that: (1) The argumentation pattern is divided into 2 categories namely, (a) Category Four Elements and (b) Category Five Elements. (2) In the category of the Four Elements divided into 2 patterns of argumentation, namely the C-G-W-B Pattern and the G-C-M-W Pattern. In the CGWB argument pattern, the argumentation elements used are a claim (position statement), ground (data or facts), warrant, and backing, while in the GCMW argument pattern, the argumentation element used is ground (data or facts), claim (position statement), Capital Qualifier (Modality), and

warrant (guarantee). (3) In the Five Elements category forms the G-C-W-B-Pc argument pattern. In the G-C-W-B-Pc argumentation pattern, the argumentation elements used are grounds (data or facts), claims (position statements), warranties, backings (support), and possible rebuttal (exceptions). In the case of the five-element category, the argumentation pattern does not use a Capital qualifier.

5. 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.

Almeida, W. N. C., V & Malheiro, J. M. da S. (2018). Argumentation and Investigative Experimentation in Teaching Mathematics. In *Alexandria: Revista de Educação em Ciência e Tecnologia* 11(2): 57–83.

Boell, S. K., & Hovorka, D. S. (2019). Writing, Arguing, Contributing - A Cogent Argumentation Framework for Identifying, Specifying, and Evaluating Research Contribution. *Australasian Journal of Information Systems 23*(1): 1–16.

Casey, L., & Hallissy, M. (2014). Live Learning : Online Teaching, Digital Literacy and the Practice Of Inquiry. *Irish Journal of Technology Enhanced Learning* 1(1): 1–7.

Creswell, J. W. 2012. Educational research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. In *Educational Research* (Vol. 4).

De Villiers, V. (2010). Pondering on Problems of Argumentation: Twenty Essays on Theoretical Issues. *Group Analysis* 43(3): 406–407.

Esterhuysen, S., & Stanz, K. J. (2014). Locus of Control and Online Learning. *Journal of Industrial Psychology* 30(1): 63–71.

Goldstein, M., Crowell, A., & Kuhn, D. (2009). What Constitutes Skilled Argumentation and How Does It Develop? *Informal Logic* 29(4): 379.

Gutama, H. K., Narto, & Sudarso, I. (2014). Upaya Peningkatan Penjualan dengan Pendekatan Metode Quality dan Focus Group Discussion pada Kafe House of Padmaning Surabaya. In *Prosiding SNST Ke-5 Tahun 2014 Fakultas Teknik Universitas Wahid Hasyim Semarang 17, 2011*, 17–22.

Handayani, P. (2015). Analisis Argumentasi Peserta Didik Kelas X SMA Muhammadiyah 1 Palembang dengan Menggunakan Model Argumentasi Toulmin. *Jurnal Inovasi Dan Pembelajaran Fisika* 2(1): 60–68.

Heitmann, P., Hecht, M., Scherer, R., & Schwanewedel, J. (2017). Learning Science Is About Facts and Language Learning is About Being Discursive -An Empirical Investigation of Students' Disciplinary Beliefs in the Context Of Argumentation. *Frontiers in Psychology* 8(946): 1–16.

Hewison, D., & Kuras, M. (2005). Handbook of Argumentation Theory: A Critical Survey of Classical Backgrounds and Modern Studies. *Journal of Analytical Psychology* 50(3): 395–403.

Kremling, A. (2018). A New Argument Scheme for Causal Explanations by Analogy? the Case of Galileo's Explanation of the Tides. *Studies in Logic, Grammar and Rhetoric* 55(1): 131–149.

Liu, Y. (2019). Using Reflections and Questioning to Engage and Challenge Online Graduate Learners in Education. *Research and Practice in Technology Enhanced Learning* 14(3): 1–10.

Mao, L, Liu, O., Roohr, K, B., V, Mulholland, M., Lee, H., & Pallant. (2018). Validation of Automated Scoring for a Formative Assessment that Employs Scientific Argumentation. *Educational Assessment*, 23(2): 121–138.

Maulyda, M. A., Annizar, A. M., Hidayati, V. R., & Mukhlis, M. (2020). Analysis of Students' Verbal and Written Mathematical Communication Error in Solving Word Problem. *Journal of Physics: Conference Series* 1538(012083).

Oktasari, D., Kuswanto, H., Ismet, I., and M.S., S. (2018). The Technology Pedagogy Knowledge (TPK) Teacher Using Worksheet 3D Pageflip Professional for Promoting Argumentation Skills' High-Schools Students in Physics Learning. *Jurnal Penelitian & Pengembangan Pendidikan Fisika* 4(2): 131–140.

Pei, L., & Wu, H. (2019). Does Online Learning Work Better than Offline Learning in Undergraduate Medical Education? A Systematic Review and Meta-Analysis. *Medical Education Online* 24(1): 1–14.

Radha, R., Mahalakshmi, K., Kumar, V. S., & Saravanakumar, A. R. (2020). E-Learning During Lockdown of Covid-19 Pandemic: A Global Perspective. *International Journal of Control and Automation* 13(4): 1088–1099.

Rahimi, H., Kalantari, A., Rafiee, N., & Khosravi, S. (2019). Social Trends Affecting the Future of Iran's Health System: A Qualitative Study Using Focus Group Discussion. *International Journal of Preventive Medicine* 10(1): 115.

Rybka, Y. V. (2015). Using the Debate Method for Teaching Argumentation to 10-12 Year-Old Children. *The Education and Science Journal* 39(6): 148.

Shoenfeld, Y. (2020). Corona (Covid-19) Time Musings: Our Involvement in Covid-19 Pathogenesis, Diagnosis, Treatment and Vaccine Planning. *Autoimmunity Reviews* 19(6): 102538.

Vidaillet, B. (2011). Charles Willard's A Theory of Argumentation. *Informal Logic* 32(5): 705–707.

Wu, & McGoogan. (2020). Characteristics of and Important Lessons from the Coronavirus Disease 2019 (Covid-19) Outbreak in China. *Journal American Medical Association* 24(2): 1–5