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Profile of Toulmin's Scientific Arguments Students and Technological Utilities in Global Warming Topic

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ABSTRACT

Research aims to determine the profile of Toulmin's Scientific Argument on students' and Technological Utilities In Global Warning Topic. This research is a quantitative descriptive study using the observation method. Data is collected through observation, validation, tests, and questionnaires for student responses. The analysis of students' argumentation skills was carried out by observing the learning process and giving a written test conducted in students of senior high school. According to Toulmin, the assessment of students' argumentation skills refers to the measurement of argumentation skills, which includes components of claim, data, warrant, rebuttal, and backing. Based on the results of the study, it can be concluded that the Toulmin's Scientific Arguments students and Technological Utilities are still relatively low, Toulmin Scientific Arguments students skills are at level 2, dominated by the most claims originating from scientific data/concepts and experience as well as personal observations of the environment and the use of technology in learning is still not optimal to improve Toulmin's Scientific Arguments Students. Hence, it is necessary to provide innovative learning that can optimally improve Toulmin's Scientific Arguments.

INTRODUCTION

Education is one of the components that play a crucial role in the journey of human life; this is because education is a place to give birth to superior and quality human resources in various ways, including in attitudes, knowledge, or skills in dealing with a problem. Education is an effort process that is structured in detail for individuals to grow into human beings who are responsible, independent, creative, knowledgeable, and have noble characters, which can be seen from both physical and spiritual aspects. According to Jannah (2020), education is learning through processes or stages carried out consciously to develop potential, both in cognitive ability and self-development through attitude. One of the factors that support the learning process is the school. The learning process and its components consisting of teachers, students, learning objectives, and learning models that have been appropriately prepared can produce success in the learning process (Fitri, 2020)

This statement is by Law no. 20 of 2003 concerning the National Education System Chapter II Article 3, which states that the function of national education is to grow the ability and shape the character or behavior and civilization of a dignified nation with the hope of being able to educate the nation's life, besides that it aims to develop the potential of students to become human beings who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Based on the description above, the educational process can develop students' potential from various aspects and help them become citizens with noble character, knowledge, and responsibility. The form of the educational process contains various aspects that must be trained in students, namely

critical thinking skills in formal education activities. Education leads to school education that has specific requirements. Within the scope of a fixed organization and management, more formatted and bound by legality, this educational process takes place over a long and regular period. These various things are attitude instruments embodied in Indonesia's curriculum, namely the 2013 curriculum; students are required to participate actively in learning when referring to the 2013 Curriculum (Handayani et al., 2015).

In the Revised 2013 curriculum, practicing critical thinking skills is carried out with five activities, including Observing, Questioning, Trying, Analyzing, and Communicating. In the current era, The Independent Curriculum also provides many opportunities for implementing critical thinking education for students. Some forms of educational strategies that direct students to think critically (Hwang et al., 2015) include problem-based learning (Martyn et al., 2014), project-based learning (Anazifa & Djukri, 2017), discovery learning (Putri et al., 2020; Yerimadesi et al., 2019), and blended learning (Jou et al., 2016). According to Setiono (2017) the science learning process must be able to trigger high-level skills (critical thinking, creative, and have problem-solving skills) in students. Argumentation skill is one of the determinants of a student's success in learning. It is related to one's ability to make the best decisions in problem-solving and training critical thinking.

The teaching and learning process that requires understanding concepts and knowledge in the form of scientific argumentation consists of several subjects, including Physics. Physics is one of the fields of science that is included in science. Based on the Regulation of the Minister of Education and Culture Number 69 of 2013 concerning the Basic Framework and Curriculum Structure of Senior High Schools/Madrasah Aliyah, Physics is one of the subjects of specialization in mathematics and natural sciences. Essential to encourage students to think critically. In learning activities, students' scientific argumentation skills with the Toulmin Argument Pattern pattern are still classified as low, which affects student learning outcomes. The ability of students' scientific argumentation low impact the lives of students in the future, who are unable to compete in an increasingly complex life and may lose opportunities for excellent work (Faiqoh et al., 2018)

Argumentation is one of the essential components in daily social communication, especially in convincing others to accept the opinions expressed. Nowadays, people are getting smarter, and arguments with a scientific basis will be more readily accepted. As part of their educated, students must be able to convey scientific arguments. Argumentation is the process of strengthening a claim through critical thinking analysis based on the support of evidence and logical reasons. This evidence can contain facts or objective conditions that can be accepted as truth. The ability to argue which states there is a causal relationship is reflected in the answers of students who can answer correctly and describe the flow of logical and systematic thinking with the excellent and correct language. Statements submitted by students in arguing refer to the TAP (Toulmin's Argument Pattern).

Stephen Toulmin, in his book entitled The Uses of Argument, that Toulmin's argumentation pattern has had a significant impact on how science education defines and uses arguments in studying scientific material. Researchers can also use the Toulmin argumentation model (TAP) to analyze a form of argumentation. Through a

book entitled The Uses of Argument. The Toulmin Argument Pattern (TAP) pattern is used to assess and model scientific research (Osborne, 2017)

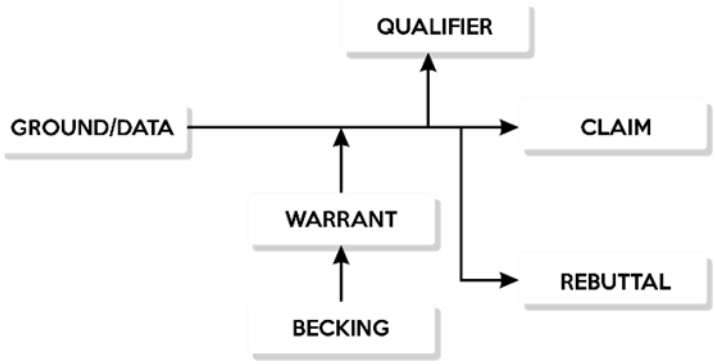

Figure 1. TAP sentence pattern structure.

Figure 1 shows that the argument sequence structure consists of 6 essential components: grounds, claim, warrant, backing, qualifier, and rebuttal. The TAP pattern consists of data that supports a claim so that it can be strengthened by warrants based on the backing but can be refuted. TAP consists of several components such as claim, data, warrant, backing, and rebuttals used in analyzing argumentation skills in both learning and research. The components of the TAP are Claims are values or statements put forward by people based on existing facts; Data is a statement in the form of numbers or writing that is used as evidence to strengthen the claim; A warrant is a statement used to explain the relationship between data and claims in scientific arguments; Backing is a basic assumption where the assumption is often explained implicitly in a series of scientific arguments Disclaimer: is a statement contrary to the data and claims that existed previously (Faiqoh et al., 2018)

In this preliminary study, in addition to knowing the initial ability of students' scientific argumentation, it is also used to determine the ability of students to use technology as a learning medium on the topic of global warming. The technology introduced is Augmented Reality (AR) in global warming learning. This AR can be used as an alternative approach in providing information related to the problem of triggering global warming. AR is a technology that combines 2-dimensional or 3-dimensional virtual objects into a natural environment and projects virtual objects into the real environment. AR will be able to display and convey information in real-time and interactively related to global warming. Educational technology is currently experiencing rapid development. The emergence of AR technology is widely used in the learning process to explain scientific processes, including global warming events (Adami & Budihartanti, 2016). After knowing the initial abilities of students, then it can be analyzed and interpreted the results of the information in the form of Scientific Arguments with TAP.

In addition to AR, after the COVID-19 pandemic, classroom learning has undergone various changes and developments; as a result of COVID-19, previously taught offline learning has now begun to collaborate online using various technologies, one of which is physics learning with arguments. Science on global warming. Various learning applications have developed rapidly after the COVID-19 pandemic. This scientific argumentation learning can also be formed in games, e-learning, or online worksheets. Technological developments after the pandemic provide benefits and a source of

innovation and increased efficiency on a global scale. In the study of scientific argumentation, in particular, it impacts the usefulness and convenience of today's learning technology. The technology used in this learning can also increase support for classroom management. Learning innovations using AR technology and online classrooms can open new horizons for students, where students are faced directly with scientific phenomena in three-dimensional form so that students, when studying science material, such as global warming, can be more fun and meaningful (Sumardani et al., 2020).

Several approaches to learning with technology are also used in addition to those mentioned above to assist in learning Scientific Arguments on global warming material. Learning can be done using the Science Technology Society (STS) approach, one of the constructivist teachings that can develop students' abilities in making arguments and defending their arguments through data previously collected through various sources. Based on the data collected can increase the effectiveness of the decision-making process. Through the camera feature, students experience artificially depicted reality to represent real objects with today's technological devices such as smartphones, tablets, and computers (Syarifudin, 2020). In arguing, students must be able to develop reasonable reasons to support their arguments until they reach quality arguments in solving a problem. The use of the STS is one of the benefits of this technology which is very supportive in learning assignments and training students' scientific argumentation skills on the Global Warming Topic.

Global warming or global warming is an increase in the average temperature of the atmosphere, sea, and land of the Earth. Global material warming is one of the issues that cause. There is controversy and difference of opinion among various parties' points of view, so it can be used to practice argumentation skills (Herlanti, 2014). The global average temperature at the Earth's surface has increased by approximately 0.74 to 0.18 °C (±1.33 to 0.32 °F) over the last hundred years. The Intergovernmental Panel on Climate Change (IPCC) concludes, "Most of the increase in global average temperatures since the mid-20th century is most likely due to increased concentrations of greenhouse gases caused by human activities through the greenhouse effect. This fundamental conclusion has been put forward by at least 30 scientific and academic bodies, including all the national science academies of the G8 countries. The climate model used as a reference by the IPCC project shows that global surface temperatures will increase by 1.1 to 6.4 °C (2.0 to 11.5 °F) between 1990 and 2100. There are several different results due to the use of these scenarios. Scenarios of future greenhouse gas emissions and models with different climate sensitivities. While most research focuses on the period up to 2100, warming and sea level rise are expected to continue for more than a thousand years if greenhouse gas. The IPCC emphasizes that evaluations of uncertainty and preventive actions related to global warming that are carried out to reduce the effects of Global warming are complex because it is global and comprehensive in scale. The time needed is also quite long, in the process must be tested and structured, taking into account all the factors that might condistribution to make the research findings valid and credible within a certain period (Liu & Roehrig, 2019).

This study applies a guided discovery learning model of the TAP using AR Technology globally. This study aims to determine the profile of Toulmin's Scientific Argument on students' and Technological Utilities In Global Warning Topic.

RESEARCH METHOD

This research is a preliminary study with data analysis techniques in the form of qualitative descriptive analysis. This preliminary research was conducted by researchers to find out the actual situation in the argumentation skills school of students with TAP model on global warming material and to add information related to the problem in more detail. This study did not test the hypothesis. The results of this study are used as consideration for improving students' argumentation skills with the TAP pattern on global warming material.

The research and collection were carried out in the first meeting during the odd semester of 2022. The study was conducted on 72 students of grade X at state senior high school 1 Menganti in April 2022, consisting of 30 male and 42 female students. The selection of the target school was based on the statement that the school is willing to facilitate research and consider the completeness of the facilities needed to implement the device. This study uses several instruments to collect data, namely (1) a test questionnaire consisting of five indicators on global warming material, (2) teacher interview sheets, (3) student interview sheets, and (4) student response questionnaire survey.

The written test contains several test questions that are. 5 test questions are related to the indicators of the ability to argue according to TAP that students must answer by providing written answers about TAP to determine students' critical thinking skills and also be formed in a game, e-learning or various online worksheets, on global warming material. This written test consists of five essay questions, each indicator of TAP to practice critical thinking skills consisting of one question.

Table 1. Argument level of TAP pattern.

Level	Characteristics of Argument
5	Broad arguments with more than one rebuttal
4	Arguments with a claim with an identifiable rebuttal. This argument may also have multiple claims and counter-claims, but they do not have to exist
3	Arguments with a series of claims or counter-claims with data, warrants, or backing which are sometimes accompanied by weak rebuttals
2	Arguments consist of claims with good data, warrants, or backings but do not contain any disclaimers
1	Simple arguments in the form of claim vs. counter-claim or claim vs. claim

(Erduran et al., 2015)

A questionnaire or interview questionnaire is a research instrument consisting of several questions to collect information from students. In this study, the interview questionnaire aims to find out about the learning process in schools that use the TAP use of technology in learning, classroom management, and the STS approach which is one of the constructivist teachings that can develop students' abilities in making arguments and defend their arguments through data that has been previously collected through various sources. Assignments and training students' scientific argumentation skills This interview questionnaire presents fifteen questions for students and teachers. The figure 2 shows the stages of the research method on Toulmin's Scientific Argumentation Skills Profile and the use of technology in learning to improve students' critical thinking skills on global warming Topics. The phenomena discussed in physics

are often related to everyday life. To help To understand physics well and requires the right learning approach using technology that can explain the conditions so that they become real, Previous research has provided ideas for conducting learning by utilizing AR technology and the STS. The use of AR and STS in learning provides several benefits to support learning, one of the benefits offered is that using AR and STS technology can provide stimulation of several senses.

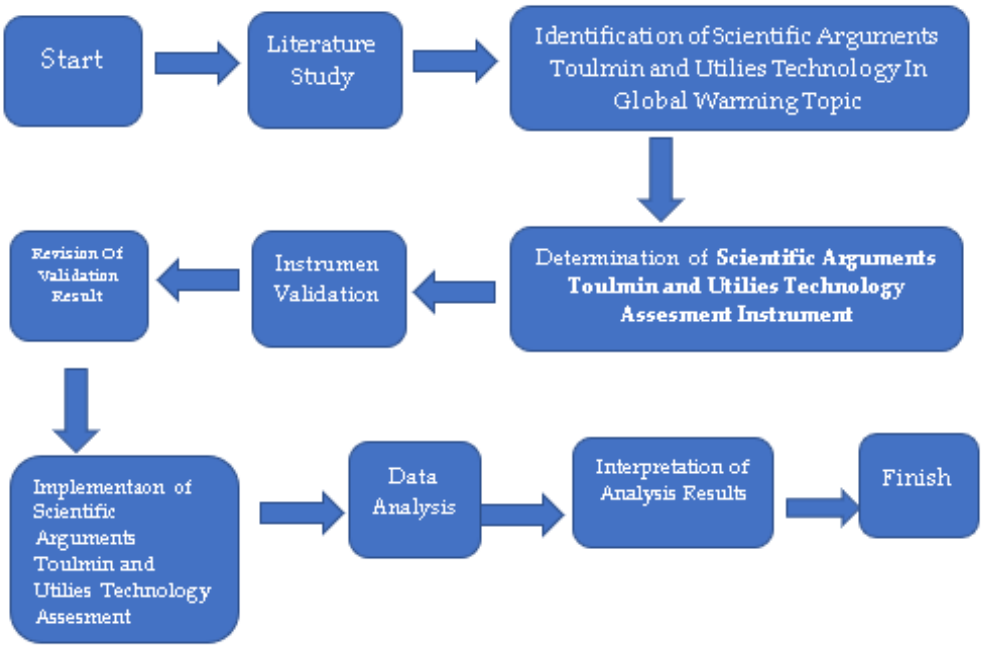

Figure 2. Research flowchart.

Based on the research flow in Figure 2, this research starts by determining the research topic, namely the TAP and the use of technology, then next looks for some references related to the above topic from various scientific journals and books, after that identify the research topic as In order to obtain research data, the next step is to compile learning tools as well as test instruments, then validate the learning tools and test instruments that have been prepared for two expert lecturers and one teacher at the school where the data is collected, then revise the tools and instruments from the results of the research. After it is finished and ready, the validation process takes data on scientific argumentation skills at state senior high school 1 Menganti. After getting the data, it analyzes the data associated with the literature review that has been obtained previously. After that interpretation, Fill in the results of the data obtained to achieve the expected goals of this research.

Students' scientific arguments and Utilities Technology are captured through essay instruments about global warming. The analysis of students' scientific arguments was carried out through students' arguments on the aspects of the types of claims submitted, the basis for submitting claims, and the strength of the components of students' arguments (Table 1). The maximum points that will be achieved later are 100, Then to get the final score for each student, the formula (1) is used.

$$Final\ Value = \frac{Points\ Earned}{\text{Maximum Points}} \quad \text{.....(1)}$$

The applicable categories are as in Table 2.

Table 2. Applicable categories.

Range of Score	Categories
75 < Score ≤ 100	High
45 < Score ≤ 75	Medium
Score ≤ 45	Low

In addition to the essay instrument, a questionnaire was also given to collect student opinions regarding teacher questions related to developing students' argumentation skills. In addition, an observation sheet is also used, which aims to observe the use of various kinds of technology today, such as games, e-learning or various online worksheets, classroom management, and STS the activities used by teachers, students, as well as interactions between teachers and students as well as students with other students during the physics learning process.

RESULTS AND DISCUSSION

The ability to formulate and evaluate arguments has been widely recognized as the basis for good thinking skills and is one of the goals of science education. Students who receive science learning must present accurate statements, communicate convincingly to others, respond to other people's arguments and compare various arguments logically. According to Setiono (2017), the science learning process must be able to trigger higher-order skills (critical thinking, creativity, and the ability to solve problems) in students. Argumentation skills are one of the determinants of student success in learning because it is related to one's ability to make the best decision in the face of a solution problem.

The observation of the learning process showed that three students had the initiative to express opinions verbally, and students tended to give short answers to questions posed by the teacher. When the teacher asks the student's answer, it is still a simple statement without supporting evidence in the form of evidence and reasons. Based on the results of observations that have been made by analyzing students' answers according to the rubric of argumentation assessment by Toulmin and Utilities Technology In Global Warming Topic. The technology introduced is AR in global warming learning. After knowing the initial abilities of students, then it can be analyzed and interpreted the results of the information in the form of Scientific Arguments with TAP. The results of the assessment of the argumentation skills of students in classes X -1 and X-2 Senior High School 1 Menganti are presented as follows. Learning by using technology in the topic of scientific argumentation gives a different impression to students, both during the process of delivering material such as using various technologies, games, e-learning or various online worksheets, classroom management, and STS as a learning resource so that students better understand the material presented while also introducing new learning applications that have never been known before. Based on preliminary research on argumentation skills conducted by researchers at state senior high school 1 Menganti in class X-1 and X-2 with a total of 72 students, to determine the profile of students' Scientific Arguments Toulmin and Utilities Technology In Global Warning Topic. One of the interactive learning methods namely AR. AR can be used as an alternative approach in notifying heating triggers

global problems. AR as a technology that combines virtual objects, two-dimensional (2D) or three-dimensional (3D), into a natural environment and projects virtual objects into the real environment.

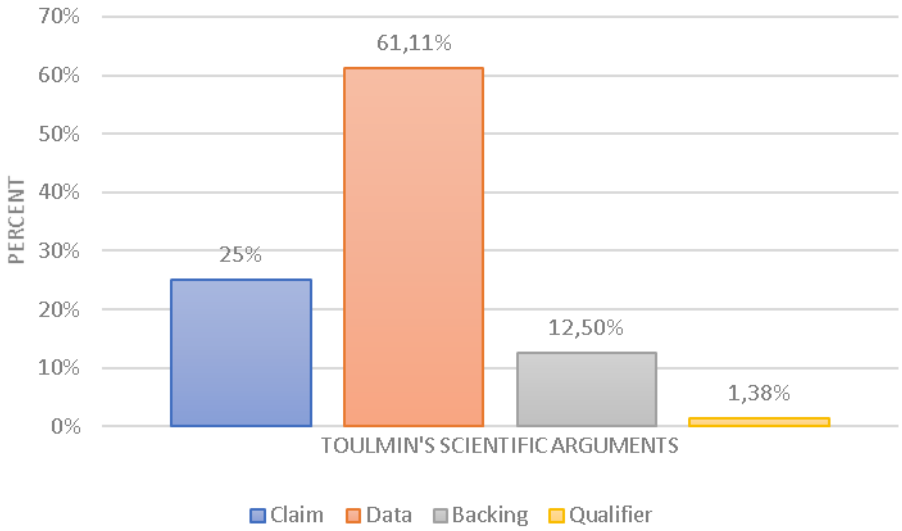

Figure 3. Profile of students' toulmin scientific argument.

This study used five questions to measure students' scientific argumentation skills. The first question indicator was about explaining innovative alternative solutions to global warming problems. The second question indicator was about interpreting the factors causing global warming. After that, the third question indicator explains the impact of warming. Global warming, then the fourth question indicator is about concluding the impact of global warming, and the fifth question indicator is about evaluations that are relevant to the problem of greenhouse gases and their consequences on global warming. However, the relationship between concepts needs to be described clearly and logically, and the solution arguments must be more in-depth. Based on Toulmin's argumentation ability indicators, students' scientific argumentation skills based on the graph above are that students can use claims of 25%, use 61.11% data, use the backing of 12.50%, and Qualifiers of 1.38%. According to Argumentation Level Indicators in Toulmin's Argument Pattern has reached level 2, argumentation consists of claims with good data, warrants, or backing. However, it does not contain any rebuttal. Details of students' answers regarding TAP skills include. In the research (Setiawati & Nurlaelah, 2017), the results show that the observations in school show that the ability to profile students' scientific arguments still needs to grow. Low profile argues that low concept reinforcement skills and mastery of the material show students. In general, students are less capable of responding to problem-solving solutions from the teacher in classroom learning. Based on the results of the review more profound into the abilities of the students at level 2 that has been able to express claim with the reason (warrant) but still rarely express support against their claims, and there has been no rebuttal.

1. Claim

The first argumentation indicator is about claims. This indicator shows that students can determine initial conclusions about an event, in one of the questions being tested is about the melting ice in Greenland. Students who are good enough in determining

claims with a percentage of 25%. Wardani et al. (2018) explain the quality of the argument that there is only one fruit claim. Students need to elaborate compelling reasons to back up the claims it makes with data, warrants, or backing. Such an answer can say the students answered with the quality of the argument still low.

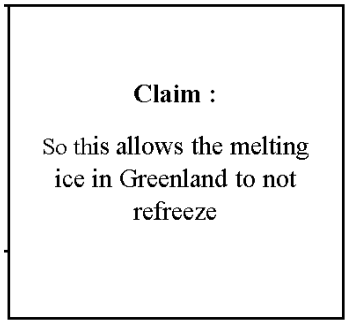

Figure 4. Student claim answers.

Figure 4 shows the student's claim is correct. This is due to global warming, which causes the ice in Greenland to melt and cannot freeze again. This shows that students can create a statement using facts and the truth, but the arguments are still simple. They can claim vs. claim. According to Wardani et al. (2018), argumentation skills are still minimal students only explain the reasons for the claims they make by repeating the statement in question.

2. Data

The second argumentation indicator is data, which means that students can collect specific evidence about a situation based on clarity and make a precise and definite claim.

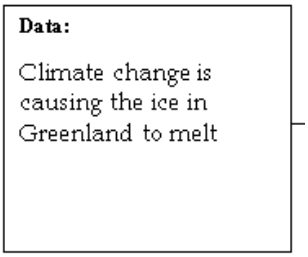

Figure 5. Student data answers.

Figure 5 done by considering the reasons that support the claim so that what has been formulated is correct. Strong and logical, the students in this study were good at determining the data from an event, with a percentage of 61.11 %. Based on Figure 5 above, the data determined by the students are correct because of climate change related to global warming, which increases the average temperature of the Earth's surface and can cause the ice in Greenland to melt. This shows that students can collect evidence - evidence that supports the claim but has yet to be equipped with numerical data or research that climate change is causing the ice in Greenland to melt.

3. Backing

In this backing indicator, students are expected to be able to provide support for statements made previously based on data, facts, and justifications that have been

stated previously. In this study, students still needed to improve in determining the backing of a statement made. This resulted in a claim that had been made not strong and unfounded. In this study, the backing ability of students was 12.5%. This shows that students need more support for a statement, and the data presented needs to be more accurate.

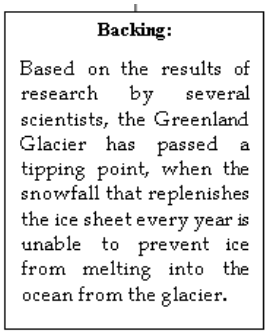

Figure 6. Students' backing answers.

Based on Figure 6, the backing shown by students is improper. This is because the data support to strengthen the facts is limited to scientists' statements and has yet to show numerical data or similar research. This shows that students cannot provide good support for a statement, and the data presented needs to be more accurate. Toulmin argumentation skills of students at this level show that the argument has a clear rebuttal based on a claim. This argument can say to be sufficient but still needs to be improved return.

4. Qualifier

The next indicator of the ability to argue is a qualifier that shows the degree of certainty or possibility of the quality of a claim.

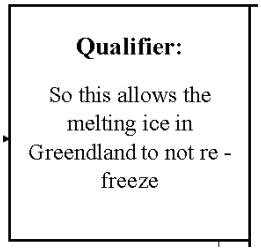

Figure 7. Student qualifier answers.

Where an argument put forward can have two modal qualifiers, namely markers of certainty and markers of possibility, in this study, the ability of students to determine qualifiers is still shallow, namely the percentage of 1.3%. Based on Figure 7 above, the ability of students to determine qualifiers is still limited to simple statements. They have yet to be able to meet criteria such as two modal qualifiers, namely markers of certainty and markers of possibility. Toulmin's opinion that the qualifier indicator can be used as a benchmark for solid evidence or data that has been expressed to support a claim (Abduh et al., 2019)

Sugiyono (2017) shows data collection techniques are fundamental at the research stage because the purpose of research is to obtain data so that it will produce conclusions, which are sent to the WhatsApp group. As many as 72 students of class X-1 and X-2 state senior high school 1 Menganti were asked to complete a questionnaire related to scientific argumentation skills and the use of AR technology in learning

global warming, consisting of 10 questions. The statements put forward by students involve using technology in learning with the TAP. So the results are presented in Table 3. Physics learning feels tedious and complicated according to students asked in a questionnaire with information:
1 = disagree,
2 = disagree,
3 = agree,
4 = strongly agree

Table 3. Statement students about toulmin's argument pattern and utilities technology.

No	Statement	*Percentage (%)*			
		1	**2**	**3**	**4**
1	Physics learning at school still uses conventional learning and tends to be boring	5,5	33	56	4,4
2	Physics Learning Methods on global warming are still limited to using textbooks and not yet applying technology in learning	1,8	25,7	56,9	15,6
3	Students are not familiar with the Toulmin Argument Pattern (TAP)	3,2	52,3	43,1	1,4
4	Students have never received a question in the form of a Toulmin's Argument Pattern (TAP)	33	26,6	38,5	1,9
5	Students have never used learning technology in discussing global warming material, and in daily life	0	20,2	60,6	19,3
6	Toulmin's Argument Pattern (TAP) is essential for practicing Scientific Argumentation Skills	1,8	1,8	56	40,4
7	Students need help with working on physics questions in the form of scientific arguments.	19,3	52,3	23,9	4,5
8	The Toulmin Argument Pattern (TAP) pattern is suitable for global warming materials	19,3	23,9	52,3	4,5
9	The use of learning technology is suitable for global warming material with the Toulmin Argument Pattern (TAP)	0	20,2	60,6	19,3
10	Learning Motivation of Students on global warming material is still low	0,9	21,1	58,7	19,3

Based on the results of interview questionnaires conducted via google form to 72 students of class X-1 and X-2 state senior high school 1 Menganti, the results are in Table 3. Namely, the majority of students, 56% of the total students, agree that learning physics in the classroom tends to be boring and still conventional. This is also supported by the statement of students, with 56.9% agreeing that there is no use of technology in physics learning. Learning techniques such as games, science technology society, and quizziz can increase students' motivation. In addition, based on the results of interviews conducted with students, 52.3% of the total students agreed that when learning physics did not know the use of TAP and learning technology, especially on global warming material, this resulted in students find it challenging to understand the purpose of scientific arguments when solving a problem on global warming material. The TAP is a form of scientific argumentation with a regular pattern. It can explain in detail about a problem, mainly to practice scientific argumentation skills on scientific phenomena in everyday life. As many as 60.6% of the total students agree that the use

of various kinds of learning technologies in physics learning, namely the global warming material is applied, is because to increase students' learning motivation and improve students' scientific argumentation skills in solving problems in scientific phenomena both in learning and in everyday life. Argumentation skills This scientific knowledge is essential for students to have deep decision-making abilities. This ability is a provision that will be greatly useful in the development of the 21st century, where there is also the use of technology to support the learning process (Riwayani et al., 2019). Research supports data analysis are as in Table 4.

Table 4. Relevant research result.

Author (Year)	Finding
Handayani et al., (2015)	Research shows that 92% are categorized as data. Namely, students understand the questions given so they can write down any information based on their knowledge; 92% are categorized as Claims, 81% are categorized as Warrants, students can explain the relationship between Data and Claims, and 74% are categorized as backing. So that students' scientific argumentation skills reach level 2 according to Toulmin's argumentation indicators.
Jewaru et al., (2021)	Based on research conducted, students have scientific arguments with a score of 46.54 (medium category), and dominant at level 3 (firm enough). Students can write argumentative components that are pretty good or interrelated but less scientific at this level. The lowest average of students is at level 2. Namely in the business sub-material and thermodynamic processes, and can only write claims. Subsequent research for the development of learning requires learning such as ADI, authentic PBL, or the STEM approach to improving students' scientific argumentation skills.
Suliyanah et al., (2020)	The results showed that there is an effect of the ADI model on students' oral scientific argumentation skills, with a mean at level 3 and supported by written arguments with an average score of 2.72 on the topic of elasticity. so it can be concluded that most of the student's abilities in providing scientific material argument are at the level of providing a claim with weak support.
Admoko et al., (2020)	Based on these results, it can be concluded that the application of the ADI. The model can improve students' scientific argumentation skills.

Many studies have been conducted on using Scientific Arguments, especially in learning physics. Based on research by Istiana et al. (2020) states that skill argumentation for students has an essential role in constructing explanatory concepts, models, and a principle or theory of something studied material. The results of previous studies that are relevant to the use of the Toulmin Argument Pattern (TAP) model to train students' scientific argumentation skills and the use of technology in learning about global warming material and in daily life.

CONCLUSION

This research is about the initial profile of students' scientific argumentation abilities according to the Toulmin pattern, with the results obtained that students' ability to argue is supported by Claim, Data, Backing and qualifications. While the percentage of occurrences of warrants and rebuttals. In addition, the use of technology in learning is not maximal. Relatively low, students' argumentation abilities are dominated by most of the claims originating from data/concepts of Claim and Data, as well as personal observations of the environment and the use of technology in learning, is still not optimal to improve scientific argumentation skills students, in this study the initial conditions of learning in the classroom were obtained, namely that learning innovations had not been carried out using t technology. Hopefully, this research can provide an overview and suggestions for the learning process to optimize technology in scientific argumentation further to make learning more meaningful. This research can be developed for further research using technology with various learning models to train students' argumentation skills.

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