



# Student Perceptions of Technology Needs in Scientific Writing

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**Abstract.** The use of technology in learning is very much in line with today's 21st-century learning. Students want lecturers to teach step by step using technology in writing scientific articles, rather than just giving instructions. This study aims to identify the technological needs needed in learning to write scientific articles. This study uses a quantitative approach with a survey method on students. Questionnaires were used as data collection instruments which were distributed to a sample of 110 students who were randomly selected. The results showed that students' attitudes towards the use of technology directly in the learning process were inversely proportional to only being explained without direct practice.

**Keywords:** technology · scientific articles · surveys · students

## 1 Introduction

Learning needs technology in the face of developments in the current digital society 5.0 era [1]. Lecturers' and students' readiness to use technology during the learning process is fundamental. This is so that the learning process can follow the concept of 21st-century learning. The use of technology in the world of education as a learning medium is no longer a foreign thing that is done during the learning process. Technological equality in the world of education will boost the mindset of students and lecturers to use technology as well as possible in the digital era to make it easier for them to obtain information in learning [2, 3].

It is undeniable that technology plays an essential role in the world of education [4, 5]. Consciously, humans are entering the digital era, which requires educators among lecturers to be involved and adapt to technology's rapid development [6]. A straightforward example that lecturers and students have done is the online lecture system in 2020 due to the COVID-19 pandemic outbreak [7, 8]. The digital-based learning system is designed so that it is easy to use by educators and students. The gadget is the most straightforward learning medium students use when learning online.

One of the learning activities that are often carried out is writing activities. Writing is an activity carried out by a person to express ideas, ideas and opinions in the form of continuous sentences [9]. The purpose of writing is as a means of conveying information, educating, and entertaining. Writing activities have several types, including writing

scientific articles. Writing scientific articles is included in the purpose of writing because writing scientific articles provides the information needed for certain circles [10].

Learning activities in lectures are inseparable from scientific articles, one of the reference sources for learning. A scientific article is a summary because it is shorter in length than the research report itself. Writing scientific articles is a significant activity in the world of education because it is a scientific activity that can communicate the results of thoughts and research [11]. Scientific articles began to be introduced in high school on subjects Indonesian with the material of scientific works. A scientific article is an argumentative essay or writing. This paper is based on the results of someone's research or theoretical studies. Concerning research and writing research reports, scientific articles can be said to be "miniatures" of research reports.

Scientific articles can reference necessary research or learning and new science being discussed (up to date) in certain circles [13]. Learning to write scientific articles has a goal for students to increase student insight in accordance with learning objectives that require students to think critically and be responsive to a problem around [12]. In addition, learning to write scientific articles will familiarize students with gaining knowledge and learning that is not only focused on books.

Writing a scientific article can start with determining the title that refers to the subject matter. The title of a scientific article must be positive, concise, specific, and clear to provide an overview of the research being carried out. Then after the title, there is an abstract containing the research objectives, implementation methods, analytical techniques, and research results. After the abstract, the next section in the scientific article is abbreviated as IMRAD, which consists of an introductory subtitle containing the background of the problem, the context of the research, the urgency of the problem, the results of the preliminary literature review that are the basis of the research through logical exposure, and states what the expected output [14] is. Authors are strongly advised to use reputable journal article references from recent publications as a research basis.

Furthermore, the method is presented in detail related to the model approach used, research design, research scope, data collection and analysis techniques, and ways of interpretation. Then, the results and discussion of research that explain the data obtained carefully and correctly can be supported by pictures, diagrams, or other supporting references. The last is the conclusion, which summarizes the results of the research findings obtained by the researcher [17].

Scientific articles will encourage students to read effectively and carefully [11]. Writing scientific articles can explore students' literacy skills to develop a systematic mindset. Although the activity of writing scientific articles is argumentative, the content of scientific articles is structured and based on facts and data in the field [18].

Digital development in the 5.0 era will provide convenience for students carrying out activities to writing scientific articles. Increasingly advanced technology will be a fast rat road in completing scientific articles. The availability of qualified technology and adequate internet network access will prevent students from being unable to write scientific articles. Digital books that can be accessed through gadgets will make it easier to write scientific articles in look for ideas and references when writing scientific articles.

Based on the results of observations and semi-structured interviews conducted with several students of Asahan University, it was found that there was a lack of interest in

students using technology in learning to write scientific articles. Low literacy is also the reason they do not understand the learning to write scientific articles. For students, writing scientific articles equated to using technology will make it difficult because of the lack of information and knowledge they get regarding using technology to make scientific writing articles easier. Socialization about technology as the use of writing scientific articles is also not followed well. In addition, less supportive facilities and technologies make them indifferent to the existing situation. This study aims to obtain information on the need to use technology in learning to write scientific articles for students.

## 2 Methods

This descriptive research uses a quantitative approach with survey methods [19, 20]. The sample taken at random was 110 students. The instrument used in this study is the distribution of questionnaires to students in the form of points adjusted to the needs in analyzing the research. The data collection technique used is a questionnaire in the form of questions designed and referring to the Likert scale with specific details such as 1) Strongly Disagree/SD, 2) Disagree/D, 3) Neutral/T), Agree/A, 5) Strongly Agree/SA. The data collection instrument in this study was a questionnaire containing ten questions assessed by an expert, a lecturer with an expert background in educational technology.

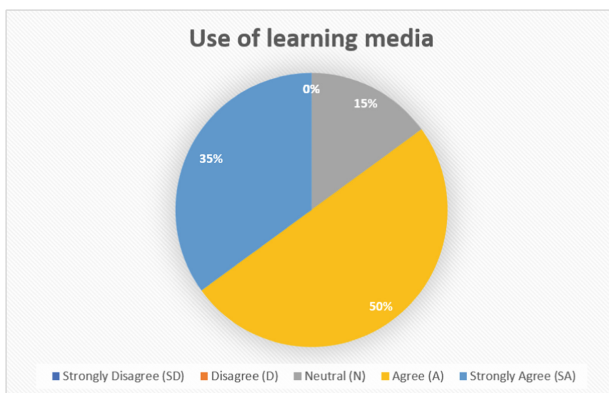
This research procedure begins with the distribution of a needs analysis questionnaire validated by experts to the research sample, namely Asahan University students, totaling 110 and given the task of writing scientific articles. After the learning process is complete, the questionnaire is distributed to students. Then, questionnaire filling activities are carried out. Furthermore, analyze the questionnaire that students have filled in to get student responses about the need for technology in learning to write scientific articles. Student responses will be analyzed and presented in descriptive form and percentages on the diagram as the results are produced to determine the highest answer in identifying problems and conditions faced during the learning process.

## 3 Results and Discussion

Probl The needs analysis in this study is to explore information related to the use of technology as a learning medium, opportunities and the use of technology in the student's point of view as a perception for writing articles, and the availability of technology and facilities owned by the campus as a support for effective learning performance. As previously explained, the data collection technique is to use a questionnaire that refers to the Likert scale with specific details such as 1) Strongly Disagree/SD, 2) Disagree/D, 3) Neutral/N), Agree/A, 5) Strongly Agree/SA. The study's results will be divided into several parts, namely, the identification of the use of learning media, student perceptions of the use of technology in writing articles, and the completeness of campus facilities.

### 3.1 Use of Learning Media

In this section, the results obtained will be presented related to the student's responses to the distribution of the questionnaire that has been carried out. The first aspect is



**Fig. 1.** Use of learning technologies

information on media use in learning to write scientific articles. Regarding the student response, lecturers use learning media, as many lecturers use technology as a learning medium. However, not all lecturers do this. The results of interviews conducted by lecturers as educators showed that the technology used during learning activities was only laptops and projectors packaged in simple power points that did not attract students' interest in learning activities.

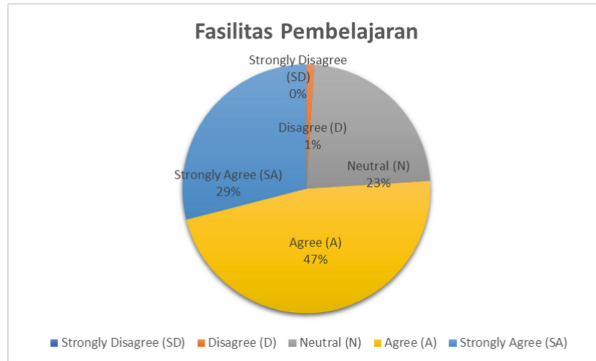
Furthermore, based on the results of the questionnaire that has been given, the following results were obtained: the response of students who strongly disagreed and disagreed with as much as 0%, neutral as much as 15%, agreed with as much as 50%, and strongly agreed as much as 35%. Overall, the data presented are related to the results obtained from student responses, namely in Fig. 1. It can be concluded that lecturers have used technology in learning activities.

Perception of technology used by lecturers as a learning medium in writing scientific articles.

The discussion in this section explains student responses to the technology used by lecturers as a learning medium in writing scientific articles. The results of the responses obtained from students will be presented in Table 1. Table 1 shows that students answered lecturers using technology in learning to write scientific articles, which are illustrated through obtaining the highest student response score, with 39.1% of students giving neutral answers. Furthermore, students replied that lecturers provided technology recommendations that could be used to write scientific articles that were described through obtaining the highest student response score, with 46.8% of students giving neutral answers. Finally, students also replied that lecturers recommend and directly guide students in using technology that can be used in writing scientific articles that are described through obtaining the highest student response score, with 48.2% of students giving very agreed-on answers. So it can be concluded that additional support was obtained from students who strongly agreed that the direct use of technology in the learning process is inversely proportional to only being explained without direct practice. Students want lecturers to teach step by step using technology in writing scientific articles, rather than just giving instructions. The table shows that using technology as a learning medium for

**Table 1.** Perception of technology used by lecturers as a learning medium, in writing scientific articles

Question	SD	D	N	A	SA	Highest Presentation Scale
Lecturers use technology in learning to write scientific articles	0	4	43	37	26	39.1 (neutral)
Lecturers provide technology recommendations that can be used to write scientific articles	0	1	46	33	30	46.8 (neutral)
Lecturers recommend and directly guide students in using technology that can be used in writing scientific articles	0	3	22	32	53	48.2 (strongly agree)



**Fig. 2.** Student response to the learning facilities available at Asahan University

writing scientific articles is significant as a learning innovation that improves students’ ability to learn in the digital era of the 21st century.

### 3.2 Learning Facilities

The learning facilities owned by students are enough to be an opportunity to raise students’ enthusiasm for writing scientific articles. It is undeniable that every student must have a laptop as a supporting facility for learning, both used for assignment purposes. At Asahan University, there is already free WIFI that students can use when working on scientific articles.

The following student response is the availability of facilities provided by the campus. Facilities such as WIFI provided by the University can be used in each class are essential. In addition to students’ laptops, it is a very supportive need. This aspect becomes crucial as a needs analysis as a framework for using technology in learning to write scientific articles. The needs analysis is described in Fig. 2 related to student responses to supporting facilities for learning activities. The presentation numbers presented are relatively high; namely, 47% answered that they agree that the campus provides facilities in the form of WIFI and computer laboratories that students can use. Furthermore, 23% of students answered neutrally, and 1% of students answered disapprovingly.

### 3.3 Discussion

It is undeniable that technology is an inherent daily necessity both in the world of work and the world of education. The development of the curriculum in the world of education following the development of technology is a competition that lecturers and students in learning activities must face. The achievement of competencies adapted by the learning system in the 21st century with different learning models and methods is inevitable in the world of education [21]. The mapping of learning carried out by lecturers to students is part of the curriculum which refers to the independent learning system. The independent learning system will provide a new face to the world of education with diversity and an efficient and student-centered learning system. The needs of the learning system in the era of digital society 5.0 will be adjusted to the developing technology.

The conveniences offered by today's technology will make the work easier [22, 23]. Similar to learning that can be done using technology, educators only need to prepare learning materials that are arranged as attractively as possible to increase the enthusiasm and interest of students to learn [24, 25].

Reviewing the positive side of learning that uses technology, the learning system will positively impact students regarding the technology used [26–30]. In addition to the convenience offered, students also adapt continuously to be able to compete in the world of work in the future as an inevitable need. Based on previous research, it is stated that the benefits and role of technology in the world of education are to improve the quality of learning carried out by educators and students and increase the effectiveness and efficiency of the learning process [31–33]. The existence of technology will make it easier to achieve the goals of education that have been determined according to applicable curriculum standards [34].

Based on opinions and related research conducted on the use of technology in learning, it is stated that using technology will facilitate the learning process [35–39]. The technology used in learning to write articles will arouse students' interest and motivation to be balanced in using technology based on a progressive mindset. Technology that can be used in learning scientific articles in the form of internet access that can be reached in each classroom makes it easier for students. Qualified internet access and existing laptops will help the performance of learning to write scientific articles well. With a computer or laptop laboratory owned by students and good internet access, learning to write scientific articles can be done. An application that can be used is Mendeley which can help students when they have difficulty compiling a bibliography. Good internet access is also used to reach students searching for journals or e-books on the Google Cendikia website, library, and several other websites. Inseparable from mistakes when writing scientific articles, the Google Doc website is also a road for students who want to easily correct typo errors.

### 3.4 Conclusion

The research results found that students' attitudes towards the direct use of technology in the learning process were inversely proportional to only being explained without direct practice. Students want lecturers to teach step by step using technology in writing scientific articles, rather than just giving instructions. Their desire to be easy in understanding

learning has not yet reached the use of technology simply because it is limited by low literacy interests. Facilities such as internet access on campus and computer or laptop laboratories owned by students have not been used correctly.

The lack of literacy of some lecturers towards technology is also an obstacle to the mindset of students who use sober learning media using less attractive power points. This research was only conducted to identify the problem of using technology in learning to write scientific articles with a population of one region. Therefore, researchers who will conduct further research by using the results of this research as a learning development to write scientific articles using technology to achieve learning objectives based on applicable curriculum standards.

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