Research Article

The Covid-19 Pandemic and the Students' Limited Digital Competence in Writing Scientific Papers

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Abstract.

This study aims to explore the correlation between students' digital competence and indecision with the challenges they encounter during the online scientific writing assistance process amid the Covid-19 pandemic. Students faced multiple forms of hesitation, communication breakdowns, and missed opportunities for discussion during this process. The research findings target guidelines for writing scientific papers. Qualitative data was collected through an online survey of 100 students from public universities in Indonesia. The research instrument employed an online questionnaire distributed to students via the Google Forms application. Data analysis was conducted using qualitative and interpretive approaches based on the principles of content analysis. The results revealed that students experienced profound doubts and confusion when it came to organizing their thoughts while conducting research and writing scientific papers as final projects. This research suggests that students' digital intelligence alone is insufficient for accessing the information required by their intellectual intelligence in writing scientific papers.

Keywords: digital competence, scientific papers, CCovid-19 pandemic

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1. Introduction

The Covid-19 pandemic has changed the tradition of consulting to make scientific work from face-to-face communication between students and lecturers to online-based contact via the internet. Students have felt various indecision, communication failures, and loss of discussion moments while mentoring scientific writing during the online learning period during the Covid-19 pandemic. Students are hesitant to determine the direction and process of research that must be done. Indecision occurs due to

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miscommunication between students and supervisors in the remote mentoring process. Some students complain about not being able to get constructive feedback from their supervisors who have checked their scientific work. Others felt that they did not understand the instructions and directions of the supervisor who provided input for assignments that students had submitted to the lecturer. In addition, students and lecturers do not have the opportunity to have intensive discussions guiding scientific writing. The Covid-19 pandemic has changed the tradition of consulting to make scientific work from face-to-face communication between students and lecturers to online-based contact via the internet. Technology-based learning demands the readiness of digital competence of students and teachers in implementing it. However, what happened in Indonesia was the opposite. The unpreparedness of students, teachers, and educational institutions to transform into the digital era has caused many problems during distance learning, especially related to guiding scientific writing for college students. Various forms of hesitation, communication failures, and the loss of discussion moments have been felt by students during scientific writing assistance during the online learning period during the Covid-19 pandemic. Students are hesitant to determine the direction and process of research that must be carried out. Hesitation occurs due to miscommunication between students and supervisors in the remote mentoring process. Some students complain that they cannot get constructive feedback from their supervisors who have reviewed their scientific work. Others feel that they do not understand the instructions and directions of the supervisor who provides input on the tasks that students have submitted to the lecturer. In addition, students and lecturers do not have the opportunity to discuss intensively in guiding scientific writing. These three factors occur simultaneously during the online tutoring period, which impacts changing student traditions in completing research and revealing the results in a scientific paper. Three factors occur simultaneously during the online tutoring period, which affects changing students' practices in conducting research and expressing the results in scientific writing.

However, not much attention has been paid to explaining that there has been a significant change in students' traditions in completing research and revealing results in making scientific papers during the COVID-19 pandemic. Several previous studies have researched the impact of online learning on only two aspects, namely the socio-cultural and economic impacts that make students bored in participating in learning. [1]; [2]; [3]. Another aspect is related to the socio-psychological impact felt by students and teachers during online learning [4]; [5]; [6]. Meanwhile, the impact of online learning on changing students' traditions of conducting research and putting it into scientific

work has not received much serious attention. This study tries to add to the study's shortcomings in that section.

The purpose of this study is to explain various forms of indecision, communication failures, and the loss of student discussion moments with their supervisors during the online process of mentoring writing scientific papers.

We argue that students who are indecisive in conducting research and writing their results in scientific papers have a bad effect on the quality of scientific writing.

1) Online Learning

Online learning is a way of learning through internet media guided by teachers where students are at a comfortable time and condition [7]. The definition states the notion of online learning as a shift in the learning system from a conventional face-to-face learning model to a learning model using internet media. The form of online learning can be found first. Second, online learning reflects that online learning is a situation of change in the world of information technology that occurs globally that describes socio-cultural and multi-technology life [8]; [9]. The three forms of online learning are processes whose continuity is based on a cause or prerequisite, namely the coronavirus disease that spreads massively and creates fear of infection from the classroom and great anxiety from the clinical setting. Online learning as a dynamic process also shows changing values through new norms related to online learning [10].

2) Digital Competence

Digital competence is individual intelligence in using technology as a tool in living various areas of life in modern times [11] [12]. However, students experience discomfort in the online scientific writing process [13]. Student discomfort is caused by the process of academic writing guidance (thesis) carried out by lecturers through three models. First, the lecturer guides students through virtual applications, such as Zoom Meetings, Google Meet, What's App, and Cloud Meetings [14]; [15]; [16]. Second, lecturers conduct written correspondence via email by conducting a review process on student academic writing drafts. Third, the lecturer communicates via cell phone to students. Students perceive the three models of educational writing guidance as a burden that hinders students' fluency in completing their academic writing. The burden impacts the psychological and non-psychic aspects that students feel. Psychologically, students feel depressed because of confusion and do not get the expected dialogical situation

[17]. Non-psychically, students are late in completing their academic writings because adequate instructions do not guide them. Academic writings produced by students tend to be sloppy and not qualified as scientific writing. The limitations of internet access and digital tools in online tutoring have created a digital divide in distance learning [18].

3) Scientific papers

Scientific writing is a process of accumulation of students' academic activities in college [19], as well as a manifestation of the achievement of students' intellectual abilities [20]; [21]. Through scientific writing, an academic can contribute to the development of science [22]. Thesis as a form of student scientific writing is the culmination of the student learning process in higher education [23]; [24]. The thesis method involves critical and dialogical thinking between students and their supervisors. Students' critical thinking in writing a thesis has the potential to produce quality writing [25]; [26]. In addition, lecturers' patience, thoroughness, efficiency, and effectiveness in the length of the mentoring process also support the quality of students' scientific writing. Quality scientific writing reflects the achievement of students' intellectual abilities. The perfection of critical thinking possessed by students [27] and the availability of dialogical access in the guidance of structured scientific writing from lecturers is a way that allows the maintenance of good and quality writing [28]. Scientific writing ability has long been highlighted as part of the indicators to measure the intellectual level of a person who becomes a college graduate.

Studies related to online learning during the COVID-19 pandemic have tended to discuss joint problems. Still, they have ignored individual problems students face broadly regarding increasing individual competence when they have to learn during COVID-19. This collective tendency is seen in three types of research. First, research that discusses the relationship between the pandemic and online learning confirms that online learning is a solution, an inventive step because the learning environment is flexible and innovative in education during the pandemic. [29]; [30]; [31]; [32]. Second, a study that discusses psychological problems faced by students due to changes in learning traditions [33]; [34] students are afraid of losing their study period [4]; students experience psychological disorders, stress, and lack of focus because they feel excessive burden during online learning [35]; [36]; [8]. Students experience psychological disorders, stress, and lack of focus because they feel an excessive burden during online learning [37]; [38]; [39]; [40].

Ketiga kecenderungan studi terkait "hubungan pandemic dengan pembelajaran "memposisikan pembelajar sebagai subyek pasif yang dikenai oleh aturan pembelajaran online, namun mengabaikan pembelajar sebagai individu yang harus aktif meningkatkan kompetensi dalam berpikir dan menulis ilmiah yang diperoleh dari diskusi tatap muka aktif dengan teman sebaya dan juga dosen. Kompetensi menulis ilmiah berkaitan dengan kemampuan berpikir kritis yang diperoleh dari umpan balik dan tukar pikiran dengan orang lain [20]; [41].

2. METHODS AND PARTICIPANTS

2.1. Research Design and Participants

This research is qualitative. The research data is sourced from the opinions and or responses of students who are conducting the process of online scientific writing guidance. One hundred state university students in Indonesia currently studying in the seventh semester participated in this study. Data collection techniques were conducted through an online survey based on Google Forms. A series of questions related to the form of guidance on writing scientific papers undertaken by students, the obstacles students face in online direction, and their impact on research activities and writing scientific papers are important questions asked in online survey activities.

2.2. Data Analysis

Data analysis took place in two stages using three analytical techniques. In the first stage, data reduction is carried out from the results of online surveys that have been carried out on similar topics. Second, the data is presented in an easy-to-understand display in the second stage, especially tables, pictures, and interview excerpts. Third, a content analysis was carried out according to the purpose of this study. Content analysis is based on Krippendorff's [42] principles. Finally, the conclusion stage is obtained from the results of crossing data with concepts to explain the relationship between forms of student confusion in the online mentoring process and the technology used in online learning during the COVID-19 pandemic with its impact on the quality of students' scientific writing.

3. Results and Discussion

Research on the forms and factors that cause student indecision and their impact on student's ability to conduct research and write scientific papers during the COVID-19 pandemic has been proven in three forms. First, what is the form of indecision and its relation to the state of the guidance process experienced by students? Second, how do students experience the obstacles and obstacles during the online mentoring process? Are there communication barriers between students and lecturers? Third, what are the implications of the online mentoring process for students and their impact on the quality of scientific writing? These three forms of questions will be presented one by one below.

3.1. Forms of Indecision in Students Undergoing the Online Tutoring Process

Students who undergo the online mentoring process experience three forms of indecision: structural, cultural, and psychological uncertainty. Structurally, students experience confusion in the form of disorder in the structure of thinking in preparing a research framework. Students hesitate when asked to organize their thoughts in designing research and write it down in a scientific paper as a research proposal. In addition, students find it difficult to determine the material object to be selected as the object of research. These difficulties arise due to the lack of theoretical reading materials and previous research literature reviews that students have understood. As a result, students cannot read the theory and do literature reviews independently. Although, before the pandemic, students were accustomed to depending on the collection of books in the library building, during the pandemic period, they lost the store of knowledge and information to conduct theoretical and literature studies. Second, students feel cultural indecision because there has been a change in traditional learning habits from face-to-face to not face-to-face or online. The scientific writing mentoring process also takes place online. Usually, students depend on direction and guidance from supervisors, who are obtained face-to-face and intensively.

On the other hand, during the COVID-19 pandemic, it turned into self-study. This condition changes the student's learning culture. Learning during the COVID-19 pandemic is required to be carried out actively and independently by students. This pandemic is a transitional period of changing learning traditions from the teacher center learning method to the student center learning method. As it turns out, this transition

period seriously impacts students who are not ready to migrate to self-centered and technology-based learning methods.

Third, students experience psychological indecision in the form of feelings of inferiority towards the results of research and the quality of scientific writings they make. This feeling of inferiority arises as a result of the low reading interest of students in reading reference sources available in online libraries. This millennial student, who is familiar with digital technology equipment, does not stutter using reference sources that are widely available in online libraries. Various national and international journal articles are available online. Theory books are also widely available online. The main obstacle is not the availability of reference sources but the change in the learning culture of students accustomed to depending on lecturers. Table 1 below describes in more detail the three categories of indecision experienced by students during the online mentoring process.

TABLE 1: FORM OF STUDENT MENTORING IN ONLINE GUARANTEE.

Structural worries (58 %)	Cultural worries (7 %)	Psychological worries (35%)	N=100
Confused about designing a proposal	Unable to study independently	Lazy and procrastinating	
Confused about determining data	Unable to build a passion for research	I feel inferior to the quality of scientific writing.	
I am confused about understanding theory.	Unable to write a quality paper	Feeling depressed because being chased by the study period will end	
I am confused about understanding methodology and data analysis.	Unable to discuss with the supervisor online.	Morale decreases because it takes too long to wait for the results of the correction from the supervisor.	

The data in table 1 is the result of categorizing student responses who experienced the online mentoring process during the Covid-19 pandemic. Categorization is done thematically. Structurally, students complain of various problems of confusion they feel. The three forms of online learning are processes whose continuity is based on a cause or prerequisite, namely the coronavirus disease that spreads massively and creates fear of infection from the classroom and great anxiety from the clinical setting. Online learning as a dynamic process also shows changing values through new norms related to online learning. Due to these conditions, students feel panicked. The three forms of online learning are processes that occur on one prerequisite: the coronavirus disease spreading massively and causing fear of infection from the classroom and great anxiety from the clinical setting. Online learning as a dynamic process also shows changes in values through new norms related to online learning. As many as 7% of students feel unable to study independently, are not passionate about learning on their own, are

unable to write quality papers, and are afraid to discuss with their supervisors because they do not meet face to face. In addition, almost half of the respondents, namely 35% of students, also experienced psychological indecision. Psychological indecision is felt by students in the form of prolonged feelings of laziness and always procrastinating on work. Morale decreased drastically because the supervisor took too long to return the revised student work. Some students also feel inferior when reading scientific writings with limitations. Students try to write as well as they can because they think they are being chased by the deadline for the end of their study period in college.

Three forms of indecision experienced by students surfaced due to two factors. The first factor is triggered by technological facilities that the lecturers do not control well, so the lecturers cannot direct students properly. As a result, lecturers communicate with guidance students via mobile phones, especially chatting via the What's App application. Lecturers do not take advantage of MS Word features already available for the writing review [43]. Communication of supervisors via the What's App application with students is not sufficient to guide writing scientific papers [44].

The second factor, the unavailability of a quality internet network, has become a serious obstacle for students in online tutoring during the COVID-19 pandemic. Not only students who are constrained, but lecturers also experience the same thing. Many lecturers feel hampered in guiding their students who do not come and meet face to face.

3.2. Factors that Inhibit Students

The obstacles felt by students when experiencing the process of mentoring writing scientific papers online were not understanding the instructions of the supervisor, old lecturers returning the results of writing corrections, and difficulties in fixing writing independently. Interestingly, a small number of students responded that they did not experience any obstacles at all. This last group is suspected to represent students classified as smart in the class. In more detail and clarity, Table 2 describes students' barriers to online guidance collected through online surveys.

Figure 1: Factors Inhibiting Students Undergoing Online Guidance.

Based on the data in Figure ??, it can be understood that 18% of students have difficulty understanding the instructions and corrections of the supervisor. Students are prevented from continuing the process of completing their scientific writing because they do not understand the directions given by the lecturer through online communication. 25.7% of students admitted that they did not have clear advice and guidance from

their supervisor to improve their scientific writing. They are asked to work independently without any constructive guidance. Therefore, students feel a deep loss when undergoing the online mentoring process. Losses also occur because the length of time used by lecturers is too long to check and return the work of their tutored students. This phenomenon is recognized to have been felt by 35% of students surveyed in this study. However, interestingly, about 20.7% of students answered that they did not experience any problems in the online tutoring process.

On the other hand, 79.3% felt a bad impact when they experienced the online mentoring process. The unkindness they felt was caused by the lecturers neglecting to return their readings to the student's work. Moreover, even if the supervisor returns the student's work, it is often without a directive guide to revising the student's writing. As a result, students become confused about improving their scientific writing work.

3.3. Implications of Online Tutoring for Students' Scientific Writing

Students think the online mentoring process is not constructive in building their productivity in completing their research and scientific writing. Various student complaints appeared in the survey conducted in this study. The following shows seven types of student complaints who undergo the online mentoring process during the Covid-19 pandemic.

"Bad, random, and not updating the latest literature" (R1)

"It is difficult to discuss with the supervisor" (R2)

"Often find it difficult to understand the supervisor's instructions" (R3)

"Difficulty in developing reasoning power in writing thesis" (R4)

"Does not understand the theory, methodology, and accurate data analysis techniques" (R5)

"Didn't find a discussion partner" (R6)

"It is difficult to discuss with the supervisor" (R7)

Various student complaints that have been raised in this research survey are correlated with students' scientific writing. Students' scientific writings that were assessed on a comprehensive exam by a team of examiners indicated the consequences of the failure of the online mentoring process. Examiners in the thorough examination assess the scientific writing of student research results as having various weaknesses and shortcomings. Various shortcomings and weaknesses of students' scientific writing evaluated by the examiner in the comprehensive exam are described in Table 2 below.

TABLE 2: quality of student scientific writing from the perspective of the teacher.

Student's scientific writing condition	N=100 %
Lots of technical and substance errors	35
Insufficient references	36.4
Problems with data collection and analysis methodologies	22.9
Good	5.7

Students' scientific writings tested on a comprehensive exam turned out to be 35% rated as scientific works with many technical and content errors. Furthermore, as many as 36.4% of students' scientific writings were assessed as scientific works that lacked proper and updated reference sources. As many as 22.9% of the students' scientific papers were considered to have many problems in research methodology, especially the data analysis section. Overall, it turns out that 94.3% of students' writings are judged as scientific works that are not feasible and of good quality. The data in Figure ?? legally prove that the online mentoring process badly impacts the quality of students' scientific writing during the Covid-19 pandemic.

4. Conclusion

Apparently, during the COVID-19 pandemic, students experienced trepidation in undergoing the online process of writing scientific papers. Students' indecision results from the digital competence of students and teachers and the loss of intensive communication moments between students and their supervisors. Digital-based communication is a significant obstacle for students to conduct research and write scientific papers. As a result, students are unable to work independently, unable to assess and decide on theoretical perspectives and appropriate reference sources to support research and writing scientific papers.

The program to improve students' digital competence at various levels of education, especially in universities, is an important target for the government to refine. These demands become relevant to learning achievement targets in the digital era. Students are required to improve their intellectual intelligence and digital competence at the same time. However, this research is still limited to a small sample. Moreover, it is localized in a university which may not necessarily reflect similar conditions in other universities in various parts of the world. Further research with a larger sample is needed to improve this study in the future.

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