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Contextualizing Corrective Feedback in Scientific Writing through Online Learning Platforms

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Abstract

Providing corrective feedback by teachers is one of the most crucial and central activities to improve the quality of student scientific writing. Although there has been much previous research on corrective feedback, few focused on lecturers' viewpoints, techniques, and assessments to guide students to write scientific papers. The objectives of this study are to describe lecturers' perceptions, practices, and self-evaluation when providing written corrective feedback in the context of scientific writing in the field of English research at multiple Indonesian teacher education institutes. The researchers employed a qualitative descriptive research method with a survey design to meet research objectives. A total of 53 lecturers were selected as respondents using purposive sampling criteria. This study used a survey questionnaire with ten questions of three categories (perception, activity, and evaluations) which were distributed to the research participants. The results of this study revealed that teachers prefer written corrective feedback, use various media and applications, emphasize the content of writing in providing feedback, and feel confident in doing this activity, even though sometimes they do not have enough time and continue to try to improve the quality of feedback provision to their students in writing scientific works. The results of this study can contribute

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as a reflection to improve teacher performance in the implementation of corrective feedback, especially in an online learning platform.

Keywords: Contextualizing, corrective feedback, online learning, scientific writing.

1. INTRODUCTION

Teachers spend a significant amount of time reacting to and correcting faults in the second language (L2) learners' writing while examining their work (Kang & Han, 2015). Many educators believe that providing such corrective feedback is essential for improving L2 learners' writing skills (Simard et al., 2015). Considering widespread belief in its effectiveness, written corrective criticism remains a divisive topic (Atmaca, 2016). Various feedback systems have already been discovered to be effective to various degrees even though there has been some information that might help with writing quality in text improvements. Recently, interest in second language learning appears to be shifting to written corrective feedback's potential to aid learners' interlingual growth, with researchers studying whether L2 learning is possible where written corrective feedback is offered and engaged (Choi, 2016).

Providing corrective feedback in scientific writing is related to the theory of second-language acquisition arguing that a learner cannot continue advancing their language abilities or grasp linguistic features unless they consciously notice the input (Banaruee et al., 2018). The theory was proposed by Schmidt (1990). The theory is one of the conceptual assertions of corrective feedback in improving language learning. The theory claims that language acquisition requires cognitive attention and consideration of linguistic characteristics. Corrective feedback provides a gateway, causing students to recognize the disparity between their discourse output and target language input (Zhu & Wang, 2019). As a result, such recognizing practices may promote instability, help students to adjust, and reconstruct their linguistic knowledge later on.

Students, who learn to write scientifically for the first time, may encounter some difficulties (Korstjens & Moser, 2018) because they have to adjust to following certain scientific norms and rules (Wilkes et al., 2015). Even if they have taken numerous series of writing classes, they still have problems conveying ideas, opinions, and arguments in scientific writing logically and systematically. When students have problems with their writing, their thesis supervisors are required to offer advice and recommendations to help the students improve their writing (Sadler, 2010). The supervisors usually communicate inputs, ideas, and improvements, which are referred to as corrective feedback in both oral and written communication (Liu & Brown, 2015). However, in light of the current online learning as a result of the Covid-19 pandemic, both supervisors and students prefer to communicate via written media to avoid physical contact and maintain social distancing (Saud et al., 2020).

Almost all academic activities, including the learning process, learning assessment, and student-guided writing activities, were conducted online during the Covid-19 pandemic (Adedoyin & Soykan, 2020; Jones et al., 2020), including in Indonesia. Online academic activities were performed to minimize the spread of Covid-19. Therefore, almost all activities were performed online to avoid face-to-face

interaction. As a consequence, educational institutions were urged by the government to enact several new educational practice laws to aid the government's attempts to tackle the Covid-19 pandemic.

In the context of education in Indonesia, writing a scientific paper is a mandatory activity for students to complete their studies. The student writing activity requires guidance, corrections, and suggestions from their supervisor. However, in line with the Covid-19 pandemic, this academic activity had to be carried out online to replace the conventional way of writing guidance. Therefore, for the activities to function well, teachers and students had to be able to modify these circumstances by utilizing some computer programs and applications. They also need to improve their ability to operate the programs and applications for student-guiding activities. Research on this topic revealed that using such programs and applications made it simpler for teachers and students to communicate while mentoring their students to write scientific papers (Lin et al., 2022; Spezi et al., 2017).

Different prior studies have looked into the teachers' practices of mentoring students to write their thesis (Druschke et al., 2018; Odena & Burgess, 2017) and journal article manuscripts (Clarke et al., 2013). In Indonesia, several studies also discussed the practice of supervising scientific writing in the form of theses and scientific publication articles. Generally, the studies discussed the influence of environmental learning on student writing quality (Iswandari et al., 2017; Rosyada & Sundari, 2021; Yu et al., 2020), students' perceptions of scientific writing skills (Prihandoko et al., 2021), and the practice of plagiarism in students' scientific writing (Novawan & Aisyiyah, 2020), whereas studies on the practice of mentoring students' scientific articles through online learning are still lacking. This study is expected to fill a gap in the literature in terms of delivering corrective feedback to students to improve their scientific writing in Indonesian educational institutions.

This study aims to uncover lecturer perceptions, practices, and assessments of the process of guiding students' scientific papers in English through the mentoring of their thesis via online tutoring. The findings of this study are expected to characterize the pattern of lecturers guiding the production of student scientific papers and to discuss lecturers' experiences with these activities. The findings of this study are projected to contribute to the development of a pattern of providing effective corrective feedback and the addition of related literature on written corrective feedback in Indonesian education.

Briefly, the study aims to answer the following research questions:

1. How is the lecturers' perception of providing corrective feedback on students' scientific writing?
2. How are the lecturers' practices of providing corrective feedback on their students' scientific writing?
3. How do the lecturers make their self-evaluation of their corrective feedback provision on their scientific writing?

2. LITERATURE REVIEW

This literature review discusses the latest theories, issues, and findings regarding the implementation of scientific writing guidance through writing feedback conducted by lecturers in Indonesia. This literature is expected to provide a description, summary,

and critical evaluation of the topic on the implementation of corrective feedback in guiding student scientific writing, especially in the implementation of coaching practices using online learning platforms.

2.1 Theories of Corrective Feedback

Feedback is defined as a negotiated engagement between teachers and students that encourages them to detect the difference between the target form and the incorrect utterance and to make changes to their standard scientific writing (Hyland, 2013). The practice can help people pay attention to and become more knowledgeable of the linguistic properties that are important for language learning. Corrective feedback acts as a stimulant, causing learners to bridge the gap between their interlanguage output and the target language's input (Zhu et al., 2020). As a result, these recognizing procedures may inspire accurate writing structures and aid learners in eventually modifying and reorganizing their language abilities.

From a sociocultural standpoint, Vygotsky (1978, in Shabani, 2016) in his Social-cultural Model postulates that language acquisition can be facilitated when learners engage in academic activities with a higher level of language competence. Corrective feedback might be used as a solution. Such an evaluation must correspond with the learners' domain of proximal growth to provide value to second language learning. This is the area between where they are now and where they may be mentoring aids in the progression of the learner's comprehension and conceptual independence.

Corrective feedback develops learners' declarative knowledge by changing it into procedural knowledge. According to the Skill Acquisition Theory, various feedback can be filled through coaching, rehabilitation, and recovery (DeKeyser, 2020). The theory covers a practical approach to understanding the connection between the brain and behaviours. The matter is that students must pass through the three stages of the skill acquisition model to become expert writers. Ultimately, the learner moves from awareness to unconscious processing, which requires less concentration, a faster speed, and higher accuracy. It also provides explicit learning and avoids inaccurate data from entering procedurals and being automatically processed. While emphasizing the importance of sufficient and meaningful practices to acquire automaticity, Ha (2022) also suggests that further research is conducted to determine the amount and type of feedback that is effective during practice.

Furthermore, Erlam et al. (2013) and Wei and Cao (2020) posited a conceptual structure for corrective feedback, which attempts to enlighten how students' differences in learning (such as age, encouragement, style of learning, and perceptions) link directly to contextual variables (such as learning to set) to act as a mediator between the oral and written corrective feedback learners acquire and their engagement with it. Learner participation is explored from three perspectives: a cognitive perspective (how learners pay attention to corrective feedback), a behavioural perspective (learners' reception or adjustment as a result of corrective feedback), and an attitude perspective (learners' views toward corrective input, including avoidance or anxiety). The framework aims to identify the variables that have been studied in corrective feedback research so far, as well as topics that future research should look into such as the impacts of individual differences.

2.1.1 Oral corrective feedback

Considering the universal agreement on the pedagogical potential of corrective feedback (CF) for language learning, there is much debate about which kind of feedback would be the most beneficial. Even if some researchers (Faturrochman et al., 2021; Irawan & Saliya, 2017) believed that students' involvement with feedback processes such as peer feedback (PF) can promote L2 learning and change their role from passive dependent learners to active autonomous participants, others question PF's pedagogic potential due to factors such as learners' scepticisms of their own or peers' linguistic knowledge, time constraints in class, and face-saving concerns. In recent years, CF has spawned a large body of study as one of the most prominent issues in Second Language Acquisition (SLA). A study on the evaluation of 18 meta-analysis studies that combined empirical investigations on various components of this instructional device provides one piece of evidence supporting the attractiveness of CF research (Plonsky & Brown, 2015).

Oral corrective feedback (CF) is described as the propriety or accuracy of a second language learner's output or understanding by which lecturers and learners perform an interaction orally through both direct face-to-face interaction and face-to-face interaction via media, such as utilizing some applications (e.g. Zoom, WhatsApp, etc.) (Erlam et al., 2013).

2.1.2 Written corrective feedback

Written corrective feedback (WCF) is a common strategy used by second language (L2) teachers to assist learners in improving their writing accuracy by responding to syntactic and semantic faults in their written materials. Syntactic faults are those relating to the use of the incorrect arrangement of words, phrases, clauses, or sentences to produce intended meanings, whereas semantic faults refer to the correct use of linguistic units; however, they fail to communicate the intended meanings. This sort of feedback has provoked discussions and analyses because it is such an important part of L2 writing education (Mao & Lee, 2020). The literature uses several terminologies to describe the written corrective feedback (WCF) scope, including complete, focused, and unfocused WCF (Lee, 2014). Comprehensive WCF refers to the comprehensive correction of any mistake in learners' writing, which is a scattershot technique of error detection. Focused WCF, on the other hand, takes a more selective approach and only provides WCF for a limited number of error kinds.

2.2 Empirical Evidence on Corrective Feedback in SLA

Several scholars from several disciplines conducted studies on the adoption of corrective feedback on student scientific writing in higher education in Indonesia (Kuswandono, 2014; Nurkamto, 2018). All studies strived to improve the quality of student scientific writing, both in the form of thesis and journal articles for scientific publishing and writing that serves as the major prerequisite for completion of their studies.

In response to the global Covid-19 pandemic, practically, all academic activities in Indonesian higher education institutions were conducted via online platforms (Syahputra & Saragih, 2021), including both applications and online communication

mediums. The activity of supporting students in producing scientific papers is one of the academic activities that influence this condition. Students and lecturers who were previously able to undertake academic interactions through face-to-face engagement have been forced to use online writing mentorship activities in this activity (Kleinbort et al., 2020).

The first year of this activity was fraught with difficulties for both teachers and students (Ezra et al., 2021). However, with the intense level of instruction and socialization by universities, this activity can be successful. Starting from this point, the goal of this study was to compile a thorough account of lecturers' attitudes, practices, and assessments of corrective feedback on student scientific writing. The instructors of the English Education Study Program from several universities in Indonesia were the subject of this study.

2.3 Perception, Practice, and Evaluation of Corrective Feedback

The focus of this research was on teachers' self-evaluation of perceptions, practices, and evaluation of activities that had been carried out in providing corrective feedback to students' scientific papers. Firstly, perception refers to the activities of organizing, identifying, and interpreting sensory information to understand information or process activities (Castelló et al., 2017) to provide feedback on the improvement of student scientific writing. Exploration of teacher perceptions in this study was expected to be able to provide comprehensive views, thoughts, and considerations on the activities of supervising scientific writing. Secondly, the practice of providing feedback refers to the actual activities that had been carried out by the teacher during the mentoring process of providing corrective feedback on the student's scientific papers. These activities consisted of ideas, beliefs, habits, methods, and processes that were applied during the mentoring process to achieve the desired goals and to produce high-quality scientific work. It is necessary to investigate this feedback-giving practice to confirm and guide if the pedagogical requirements of this activity have been met (Pon-Barry et al., 2017). Thirdly, evaluation refers to judging the value or condition carefully and thoughtfully to determine the fixed value or to determine the significance worth of the practice of providing corrective feedback.

The steps and procedures of this activity were carried out by the teachers using online platforms in the context of directing students' scientific work. Educators and students employed a variety of media and apps to carry out the process of overseeing this scientific activity (Khalili, 2020; Wong, 2020). The availability of facilities and infrastructure, accessibility, access granted by educational institutions, and the convenience of instructors and students were all factors that influenced media use.

Internal factors such as perception, practice, and evaluation of written corrective feedback, in addition to the external procedures and factors that affect the implementation of scientific work guidance mentioned above (Li et al., 2015), must also be considered because these factors have a direct impact on the quality of online student guidance of scientific work. Receiving, gathering, taking ownership, and apprehension with the mind or senses about a particular thing or activity are all examples of the word "perception". In this perception, teachers choose, arrange, and evaluate inputs to create a meaningful and coherent image of the written corrective feedback provision (Lee et al., 2021). In this sense, perception includes a mental process in which teachers pay attention to incoming stimuli, organize them, and

translate them into activity. This study looked at how instructors saw and perceived themselves in providing written corrective feedback to students in scientific writing guide activities.

Practice and assessment, in addition to perception, are significant and intriguing variables to consider when offering corrective feedback in online learning (Ranalli, 2018). Teachers will discuss their efforts in terms of delivering feedback on online learning in this practice theme. This exercise should represent teachers' activities and provide feedback for self-improvement. Meanwhile, teachers do a self-evaluation of the mentoring activities (Ozdemir & Papi, 2021) that they have done earlier in the evaluation theme. They examine their talents as well as the abilities of their students and provide recommendations to improve the quality of student scientific writing tutoring.

3. METHOD

This qualitative descriptive research uses a survey research design. The respondents of this study were 53 English lecturers (28 females and 25 males) from ten universities in five cities throughout Indonesia. The respondents were selected using a purposive sampling technique applying inclusion criteria. Meanwhile, the demographic description of the participants in this study based on the duration of work is as follows: under 5 years, 6 lecturers (9.4%); 5-10 years, 23 lecturers (43.4%); 11 to 15 years, 8 lecturers (16%); 15-20 years, 6 lecturers (11.3%); and more than 20 years, 10 lecturers (18.9%).

A total of 75 survey questionnaires, each of which consisted of 10 close questions, were distributed; however, there were only 55 respondents who returned the questionnaire results with complete responses and met the predetermined criteria. Following the code of ethics for research involving humans, the research team first explained the research objectives and asked for the respondents' willingness and approval to participate in this research. This research was carried out for three months from January to March 2022. Although the respondents for this research were not evenly distributed across all lecturers in Indonesia, each region completed and had its representative. The research instrument was delivered using *Google Form* which contained 10 closed-ended and open-ended questions with the following distributions: perception (2 open-ended and 1 closed-ended question), practice (2 open-ended and 2 closed-ended questions), and evaluation (2 open-ended questions and 1 closed-ended question) on the use of written corrective feedback on students' scientific writing during online learning.

By using the thematic analysis, the research instrument could identify and analyse patterns (themes) using the previously defined ones. Furthermore, the data that had been collected were analysed by adopting a qualitative research pattern, organizing the collected data, identifying the data framework, sorting the data into the framework, describing the data into the framework, and drawing a conclusion.

4. RESULTS AND DISCUSSION

4.1 Results

Based on the research objectives and the data analysis based on the themes set and discussed in this research topic, the results of this study describe lecturers' perception, practice, and evaluation of the provision of written corrective feedback on students' scientific writing during online platforms.

4.1.1 Lecturers' perception of providing written feedback

This section describes the lecturers' perception of the practice of providing feedback to their students in online learning. It covers topics such as feedback mode (oral or written), the medium lecturers use to offer feedback during online learning, consistency in providing feedback on student writing, and affirmation or affirmation of ideas for writing improvement.

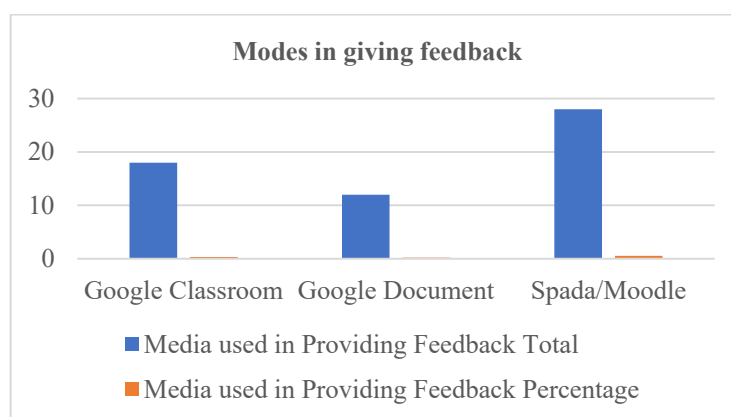


Figure 1. Lecturers' preference modes in giving feedback.

There are three options provided in the survey questionnaire for providing feedback on student writing: oral feedback, written feedback, and oral-written feedback. Most of the teachers provided both oral and written feedback in checking student writing (83%), followed by written feedback (9.43%), and oral feedback (7.54%).

In terms of the applications or media they used in providing writing feedback during the online learning period, the respondents gave the following answers as shown in Figure 2. It shows that the teachers gave various answers related to the media/applications they used in providing written feedback. Most teachers generally used more than one application to make it easier for them to provide a detailed explanation of their practices of giving feedback. The types and percentages of applications are presented in Figure 2. The most widely used media were WhatsApp (100%), Microsoft Word Review feature (98.11%), Telegram (66.03%), Spada/Moodle (52.83%), Google Classroom (33.90%), Google Docs (22.06%), Trello (15.09%), and Short Message Service or SMS (11.32%).

Meanwhile, Figure 3 depicts the rationale for using applications or media given by teachers to provide corrective textual feedback during online learning. Figure 3 shows the teachers' reasons for using media/applications to provide written corrective

feedback. The teachers responded with seven reasons when they were asked about the use of media/applications in the online learning period, i.e. media availability by 45 students (84.90%), student media choices by 35 students (66.03%), student media accessibility by 32 students (60.37%), response accuracy by 26 students (49.05%), response speed by 22 students (41.50%), and ease of monitoring results by 16 students (30.18).

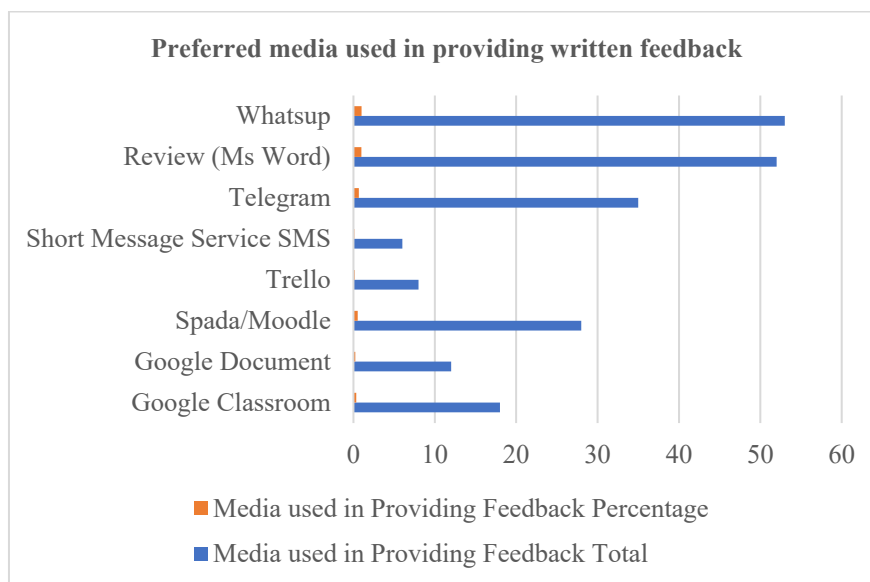


Figure 2. Preferred media used in providing written feedback.

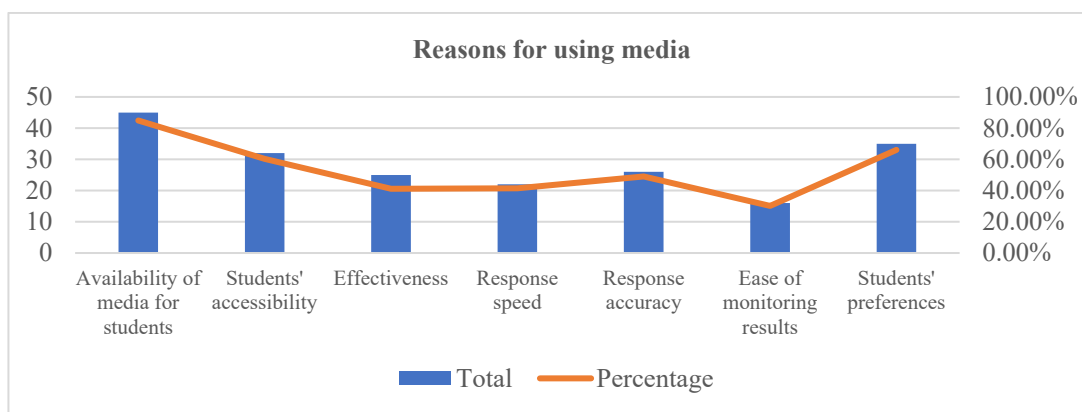


Figure 3. Reasons for using media/applications.

Regarding the frequency of completing or student writing in the process of improving scientific writing, the teachers' responses are shown in Figure 4. It describes the frequency of lecturers providing corrective feedback to improve the quality of students' scientific writing. 58% of the respondents stated that they always give corrective feedback; 38% of them often give corrective feedback; and only 2% of the respondents each seldom and never give corrective feedback to students' writing.

Furthermore, when the teacher has confirmed the affirmation of students' writing errors in the process of correcting scientific writing, the teachers' responses are shown in Figure 5. It describes the percentages of activities of giving affirmations to errors that occur in students' scientific papers. Most lecturers (58.5%) stated that they always

provided affirmations; 19 lecturers (38.8%) usually gave affirmations; 2 lecturers (3.8%) stated that they sometimes provided affirmations; and 1 lecturer (1.9%) did not provide affirmations at all.

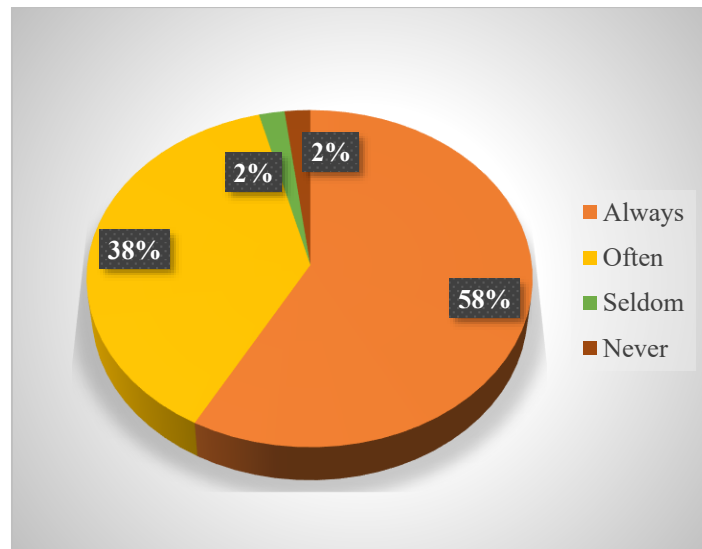


Figure 4. The frequency of providing feedback.

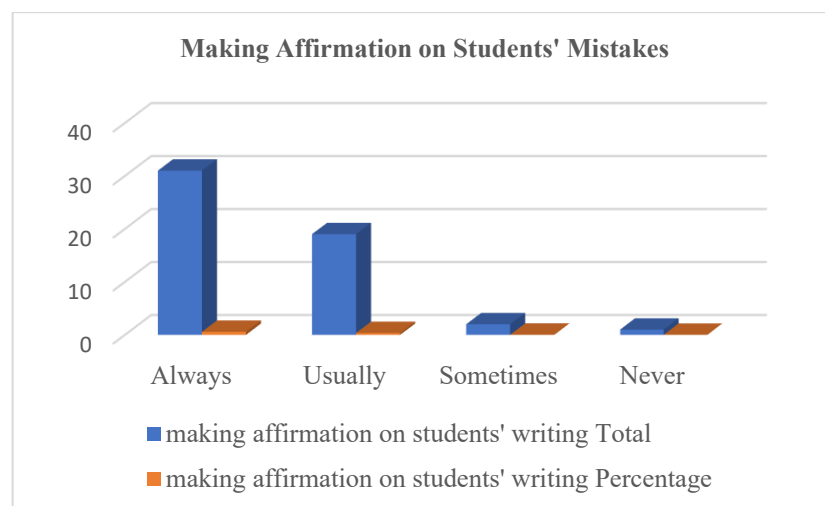


Figure 5. The Frequency of making affirmations on students' mistakes.

4.1.2 Lecturers' practice of providing written feedback

The theme of the reasons for making arguments in feedback, delivering feedback activities, the issue of scientific writing improvement, and the topic of requests for student writing development were among the data collected related to the practice of scientific writing supervision. The reasons for making arguments in feedback are presented in Table 1.

Table 1. The reasons for making arguments in feedback.

Reasons	Total	Percentage (%)
Lead to logical arguments	27	50.9
Justify logical arguments	5	9.4

Table 1 continued...

Ask about the relevance of the citation	20	37.7
Provide personal justification	1	1.8
Total	53	100

Concerning reasons for providing written feedback in the form of an argument to improve student writing, the lecturers' responses/reasons are described as the following: to direct the writing to a logical argument (50.9%), to justify, to show or to prove to be right or reasonable arguments (9.4%), to ask the relevance of the topic to the citation (37.7%), and to give personal opinions on an idea in writing (1.8%).

In giving an opinion about an idea in one article, the lecturers gave their opinions as shown in Table 2.

Table 2. Feedback delivery topic.

Activities in providing feedback	Total	Percentage (%)
Fix wrong ideas	39	73.6
Adding ideas to a content	10	19%
Write an interpretation of one idea	3	5.7%
Write personal opinions	1	1.9%
Total	53	100

When asked about the types of activity in providing feedback, the respondents provided the following reasons: to correct incorrect ideas in writing (73.6%), to write down their interpretation of one particular idea (5.7%), to add evidence to one main idea (19%), and to share personal opinions (1.9%).

Table 3 shows their comments on the issue of improving written corrective feedback typically performed by lecturers on students' works.

Table 3. Topics on written feedback.

Topics in providing feedback	Total	Percentage (%)
Writing content	25	47.1
Logics of writing	13	24.5
Writing quality/grammar/structure	7	13.2
Thesis guideline obedience	8	15.9
Total	53	100

Comments written by lecturers regarding the implementation of corrections and improvements to student writing obtained from the results of research data analysis include writing content (47.1%), the logic of writing (24.5%), quality of writing (grammar and structure) (13.2%) and thesis guideline obedience (15.9%).

The following comments and directives are associated with proposals for improvement that were requested by lecturers to students in corrective feedback material, as shown in Table 4.

Table 4. Instructions/suggestions by lecturers.

Instructions/suggestion	Total	Percentage (%)
Improve writing quality	22	41.5
Adding new related references	9	17.0

Table 4 continued...

Asking to follow writing guidance	13	24.5
Asking for clarification upon statements	6	11.3
Total	53	100

Table 4 describes the topics of instruction or suggestions given by the teachers regarding the improvement of students' scientific writing. There are four main themes that teachers practiced in this theme, namely in order of frequency: improving the quality of writing (41.5%), asking students to comply with the guidelines for writing scientific papers that have been set by each institution (24.5%), adding new references (17%), and asking for clarification/explanation on a statement (11.3%).

4.1.3 Lecturers' self-evaluation on written feedback provision

When teachers were asked to score an assessment of their performance in providing feedback to students, the scores they gave are shown in Figure 6.

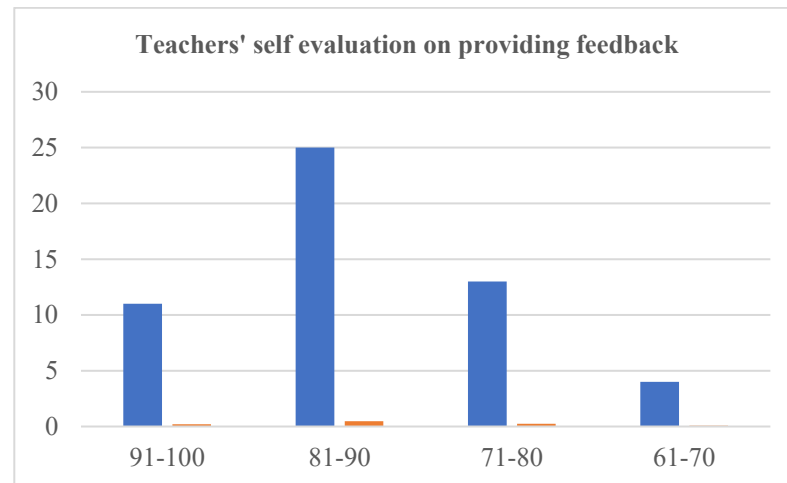


Figure 6. Teacher's self-evaluation on providing feedback.

Figure 6 shows the description of the teachers' self-evaluation of providing corrective feedback for students' scientific writing. Teachers' assessment of their practice of giving corrective feedback is as follows: a total of 11 (20.7%) teachers rated their work in the "excellent" category; 25 (47.2%) teachers considered that they had given corrective feedback in the "very good" category; 13 (24.5%) teachers rated their practice in the "good" category; and four (7.5%) teachers rated their work in the "moderate" category.

When teachers were asked to write down the topic of suggestions and corrections to the part of their students' scientific work, they most frequently corrected, detailed in Table 5.

Table 5. Parts of paper as the objects of corrective feedback.

Parts of Paper	Total	Percentage
Abstracts	36	67.92%
Introduction	46	86.79%
Method	42	79.24%

Table 5 continued...

Results	39	73.58%
Discussion	51	96.22%
Conclusion	41	77.35%
References	24	45.28%

Table 5 describes the parts of students' scientific writing that are the object of corrections by the teachers. From Table 5, almost all components of the student's papers are objects of corrective feedback by teachers. Even though the numbers and percentages are almost even, the three components with the most number and percentages as displayed in Table 5 are the Discussion section (96.2%), Introduction (86.7%), and Results (73.5%). Meanwhile, the part of writing that received the least correction was the References section (45.3%).

4.2 Discussion

4.2.1 Teachers' perception of written corrective feedback

To address the first question about the teachers' perception of written corrective feedback, the study first investigated based on the preferred modes used by lecturers in providing feedback. When compared to oral corrective feedback, most teachers prefer written corrective feedback (Chu, 2017; Han & Hyland, 2015). However, this finding strongly contradicts the results of the study by Tian and Li (2018) and Ha et al. (2021) investigating students' perceptions stating that most students prefer oral corrective feedback to written corrective feedback. This finding specifically reported the teachers' reflections on giving preferred techniques of corrective feedback on their students' scientific writing. The results also reveal that teachers always offered corrective feedback on their students' scientific writing. Even if students' writing followed the rules, they frequently provided written corrective criticism to help them develop their writing. Furthermore, lecturers consistently reinforced their students' scientific works through corrections, enhancements, and even praise. These assertions must be included to stimulate students. Concerning the use of media or applications in facilitating the provision of written corrective feedback, the results of this study found that WhatsApp, Microsoft Word, and Telegram are the most popular media/applications used by teachers in online learning in student scientific writing assistance activities. The results of this study are in line with the results of research by Han (2019) and Shang (2019). Accessibility, ease, and availability are among the reasons provided by respondents for using this application and medium (Stefanou, 2015).

4.2.2 The practice of giving feedback

The second research question addressed the teachers' practice of correction by providing corrective feedback. The results of this study indicate that the teacher's most dominant reason in providing feedback was to help students organize their ideas in a more logical direction, the most dominant feedback topic was to correct erroneous ideas, the part of writing that was most often corrected was written content, while suggestions were the most dominant feedback given to students to improve the quality of their writing. The findings of the study confirm several results related to this topic

(Liu & Brown, 2015). First, the main reason the teachers wrote arguments in written corrective feedback was to improve the flow of students' ideas according to scientific writing standards. The second point concerns the subjects that are mentioned while providing written corrective feedback. The majority of teachers reported that corrective feedback was used to rectify incorrect ideas in students' writing (Kang, 2020). This result is expected because students had little experience communicating their ideas in scientific writing and required supervision to communicate their thoughts. This finding also clarifies the findings of previous studies regarding the reasons for making arguments against students' scientific writings (Lyster et al., 2013; Wei & Cao, 2020). Most teachers responded that they always concentrated on the content of the writing when asked about the emphasis and material for enhancing scientific writing (Shang, 2019). Although other topics were emphasized, such as writing logic, grammatical faults, and conformity to thesis rules, the written substance remained a primary emphasis in corrective comments.

The findings of this study demonstrated that the sections of discussion, introduction, and technique were the three portions of writing that frequently received corrective feedback. This conclusion is consistent with Sarré et al. (2019) and Shang (2019) who claim that the three sub-sections of scientific writing needed strong logical reasoning and tended to require focused arguments that had not been mastered by students.

4.2.3 The Teachers' self-evaluation on giving feedback

The third research question addressed the teachers' self-evaluation on providing written corrective feedback. This self-assessment includes a score that they set themselves based on their practice and experience in implementing corrective feedback on student scientific writing, the shortcomings they had in the practice of providing corrective feedback, as well as the efforts they would make to improve the quality of their corrective feedback service. The findings of this study revealed that the majority of teachers gave an 'excellent' assessment of their performance in providing corrective feedback services. This finding implies that they mastered this activity well and had high self-confidence to carry it out, as stated by Li et al. (2015) and Ion et al. (2016). Most teachers revealed that the limited time in reading student scientific writings was the most dominant constraint and weakness. They reported that teaching assignments were so time-consuming that they had little time left for reading and providing corrective feedback. When asked how they planned to improve the quality of corrective feedback they would provide to students, the majority of lecturers said they should set aside adequate time to read and edit student scientific writing and grasp the university's scientific writing rules.

In general, the findings of this study confirmed what has been studied by previous scholars, especially regarding the importance of corrective feedback to improve the quality of student scientific writing (Lim & Renandya, 2020); however, several new research dimensions were added in this study related to perception, practice, and evaluation, which have never been conducted earlier by previous researchers. In addition, the involvement of many participants from various universities in Indonesia, in particular, strengthens the foundation of this research. The findings of this study are expected to represent the guiding of student scientific articles in the setting of Indonesian higher education. The teachers should rectify the flaws and

inadequacies in the practice of offering feedback revealed in this study and utilize the feedback as a foundation for strengthening their perception and motivation to increase the quality of providing feedback for their students.

5. CONCLUSION

This study aims to describe the implementation of corrective feedback by teachers on student scientific writings in universities. The focus of this research was on the perception, practice, and evaluation of providing feedback on student scientific writing. This study reveals teachers' perceptions, practices, and evaluations of providing corrective feedback to students' scientific writings systematically. Teachers' perception was described by stating the themes of preferred modes of corrective feedback and the reasons for providing corrective feedback. Teachers' practices in providing corrective feedback were explored by the themes of argumentation topics in corrective feedback, topics that are vulnerable to correction, focus on providing corrective feedback, and the most frequently corrected sections of writing. Teachers' evaluation of the implementation of corrective feedback was assessed by asking the teachers to rate their performance in the implementation of corrective feedback. In addition, they were also asked to reveal the obstacles, limitations, and weaknesses they experienced during the process of mentoring students' scientific work. One interesting fact obtained from this research is that this can explore the phenomenon of giving written corrective feedback to the guidance of writing student scientific papers more fully and more deeply.

The results of this study are expected to contribute to improving the quality of student scientific writing assistance, specifically in the Indonesian context. The limitations of this study which include the number of participants, the sharpness of research instruments, and the use of limited literature that needs to be addressed by future researchers.

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