PRE-SERVICE TEACHERS' PERCEPTIONS ON PEER ASSESSMENT PROCESS IN LEARNING ACADEMIC WRITING: ARTIFICIAL INTELLIGENCE (AI)

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Abstract: Previous research has emphasized the importance of peer assessment for active learning. However, growing evidence suggests that peer assessment is facilitated by Artificial Intelligence (AI). Thus, this study aims to investigate the cognitive conflict experiences of pre-service teachers during peer assessment process in learning Academic Writing facilitated by Artificial Intelligence (AI). The data of this study applies qualitative inquiry to analyze participants' reflective journals. This study reports the data from participants who are recruited through purposive sampling. The finding of this study thematically analyzed through the concept of peer assessment proposed by Topping (2018). This study captures the cognitive conflict involved during peer assessment process in learning Academic Writing facilitated AI. This study suggests that artificial intelligence has the potential to promote the peer assessment process in learning Academic Writing. Finally, this research ends with pedagogical implications which may contribute to a successful peer assessment process in Academic Writing contexts.

Keywords: *Academic Writing, Artificial Intelligence (AI), cognitive conflicts, peer assessment, pre-service teachers*

1. INTRODUCTION

During peer evaluation, students have discussions about their performance and standards (Liu & Carless, 2006, p. 288). This process is also called peer evaluation or peer review. Peer evaluation is a type of authentic assessment and a student strategy for teaching writing in second languages (L2) that can allow L2 students the chance to debate their completed drafts and consider other people's opinions (Hyland, 2000). Peer assessment improves students' motivation and writing quality by giving them scaffolding mechanisms (Zhao, 2018). Peer assessment is less popular in Indonesia's EFL environment since it is incompatible with the country's exam educational system and does not provide an objective assessment of learners'

knowledge levels. Additionally, it is doubtful that EFL students will participate in peer assessment or take peer assessments seriously.

Several empirical studies have investigated the impact of peer-assessment activities on L2 writing competencies in the context of EFL peer assessment (Fathi & Shirazizadeh, 2019; Lundstrom & Baker, 2009; Tian, Louw, & Khan, 2021). When it comes to adopting peer evaluation, a number of research have shown the positives of technology-facilitated peer assessment. Recent research claims that it has promoted autonomy, meta-cognitive awareness, and higher-order thinking abilities (Barak & Dori, 2009; Lai & Hwang, 2015; McMahon, 2010). Assessors and assesses have also benefited (Gielen & De Wever, 2015). Moreover, in comparing situations where those supports weren't implemented, look at learning outcomes. Tsai and Chuang (2013) discovered that organized peer assessment produced work of an outstanding quality. Through peer assessment, technology was able to assist assessors and assesses in exploring the cognitive area, particularly in producing competent writings. However, the cognitive conflicts experiences of pre-service teachers during peer assessment in learning writing facilitated Artificial Intelligence (AI) have remained under-researched. Consequently, this study attempts to investigate the cognitive conflicts of pre-service teachers during peer assessment in the learning writing facilitated by Artificial Intelligence (AI). This present study gains a deeper understanding of pre-service teachers' reflections on their writing ability by using narrative inquiry, then employing thematic analysis to discuss further research results. This study is trying to answer the following research question:

1. What are the cognitive conflict pre-service teachers' experiences during the peer assessment process in learning writing facilitated artificial intelligence (AI)?

2. LITERATURE REVIEW
2.1. Peer assessment in learning Academic writing

The EFL learners believe that learning English successfully in all aspects is challenging. They need to put more effort into improving their skills. For both teachers and students, writing is the most challenging skill to master (Montanari, Simón-Cereijido, & Hartel, 2016). For teachers, it is difficult to guide or make appropriate assessments for students (Lo, Fung, & Qiu, 2021). On the other hand, EFL learners also encounter more challenges in learning or enhancing their writing performance (Yeh, Heng, & Tseng, 2020). As a result, an assessment is an approach that ensures student success in writing. Writing is achieved by enabling the instructor to make inferences about the students' writing potential and successful learning outcomes based on their performance.

The most effective way to improve learners' writing skills is through peer assessment, although there is a wide variety of assessments available. In response to Azarnoosh, M. (2013), the recent focus on learner autonomy and independence has led to a significant increase in peer assessment. When it comes to learning writing, peer assessment is used in the EFL environment in an effort to encourage collaborative exchange among peers. Peer assessment substantially impacts the learning process by improving learning quality and supporting

students in becoming more introspective and responsible (Boud, Cohen, & Sampson, 1999). Peer assessment, as defined by Topping (1998, 2009, 2018) and Falchikov (2008), is a set of activities in which students assess and specify the quality and value of educational objectives, as well as their advantages and disadvantages, through pursuits such as writing assignments, oral presentations, and achievement tests of their fellow peers. The latter is at the same level as them in terms of skills and proficiencies. Therefore, peer assessment serves a variety of purposes, including informing and redirecting students' efforts toward intended outcomes. It also engages students in supporting and planning their peers' learning and evaluating students' work.

This article implements the theoretical model of peer assessment proposed by Topping (2018). In peer assessment, metacognition allows students to take charge of their learning. It involves awareness of how students learn, evaluating their learning needs, generating strategies to meet them, and implementing the strategies (Hacker, 2009). Consequently, peer assessment is authentic to evaluate students' work while contributing to the growth of critical thinking and metacognitive skills. For that reason, Topping (2018) proposes cognitive conflict as a peer assessment process (PA). As he states "Cognitive conflict concerns the need to loosen cognitive blockages formed from old myths and false beliefs by presenting conflict and challenge via one or more peers" (p. 105). Langfeldt and Kyvik (2015) explain that old myths and false beliefs arise when peer expertise can be a consideration in reviewing students' works. Thus, it can lead the conflict between peer. Thus, this article aims to explore the cognitive conflict experiences of pre-service teachers during peer assessment in learning academic writing in higher education.

2.1. Writing peer assessment facilitated technology

Text messaging has emerged as a new standard, allowing people to participate in multiple conversations simultaneously while on the go as a result of today's fast-paced culture (Thorne, 2017; Dale, 2016). Specifically, it focuses on machine learning technologies such as deep learning and artificial intelligence. These technologies enable teachers to teach computers by allowing them to learn from experience as humans do. Dhawan (2020) stated that when it comes to writing assessment and evaluation of writing, the Assessing Writing Tools & Tech forum is built on the premise that any tool or technology used to evaluate writing is itself a writing assessment and assessment. ASW's vast worldwide audience of writing practitioners, administrators, and scholars will benefit from the forum's succinct assessments of tools and technology. Assessment tools and technologies should be discussed with assessment research via descriptive evaluations that outline assumptions, potentials, restrictions, or future directions. Shen et al. (2020) also report on peer evaluation research conducted in a collegiate English writing class. The study's objective was to determine the influence of peer evaluation on the learner's autonomy (LA). Their study stressed the importance of peer evaluation in developing students' autonomy as learners. Learning by peer assessment significantly reduced learners' reliance on their teachers and increased their confidence in their abilities to learn. However, it did not have any discernible effect on other LA components.

2.3. Related studies of peer assessment facilitated artificial intelligence

Because peer assessment is fundamentally a collaborative assessment practice, interpersonal variables play a substantial role in determining the type and quality of peer assessment. An intriguing study conducted in 2018 by Lundstrom and Baker investigated if the examiner and assessor benefitted distinctly during the peer rating process. A sociocultural interpretation of the findings led to the conclusion that the better performance of feedback providers was due to the opportunity to choose the level at which the review took place, as long as it was within their Zone of Performance Development.

Fathi and Shirazizadeh (2019) used a self- and peer-assessment group treatment over the course of a semester. During the study's pre- and post-tests, the data were gathered. The results of the data analysis demonstrated that participants in the peer-assessment group outperformed those in the self-assessment group in terms of writing self-regulation, suggesting that peer-assessment activities appear to be more effective than self-assessment activities in enhancing writing self-regulation of the EFL learners.

Dhawan (2020) stated that when it comes to writing assessment and evaluation, the Assessing Writing Tools and Tech forum is built on the premise that any tool or technology used to evaluate writing is a type of writing assessment and assessment. Writing practitioners, administrators, and scholars worldwide will benefit from the forum's succinct assessments of tools and technology. Detailed evaluations of assessment tools and technologies should be provided in relation to assessment research to outline assumptions, potentials, restrictions, or future directions.

Even in areas that had previously been hesitant in this regard, the current advancement in e-learning has seen an unprecedented surge in the past decade. Due to the current pandemic crisis, E-Learning has been more widely deployed even in areas that were previously hesitant. For instance, Li et al. (2019) conducted a meta-analysis. The learners who took part in peer assessment showed a considerable improvement in their performance when compared to the students who did not. Additionally, when examining the variables that can impact the peer assessment effect, rater training emerged as the most important variable. Students who have received rater training would be able to improve their performance with peer assessment.

3. METHOD

Barkhuizen, Benson, and Chik (2014) anchored that narrative research combines narrative and research by using stories as research data, narrative as a data analysis method, or by presenting results. In line with this, this research follows a narrative inquiry as to the research design, with an in-depth analysis of the stories written by pre-service teachers as the participants. In brief, the researcher collected the data from the pre-service teachers' stories to gain cognitive conflicts experiences during peer assessment in learning academic writing facilitated artificial intelligence (AI).

The researcher employs thematic analysis to analyze the data. The thematic analysis model is proposed by Barkhuizen, Benson, and Chick (2014, p.74 -77). Which contain three activities: 1) reading data repeatedly; 2) coding and categorizing the data extracts; 3) recognizing the thematic headings. In this research, the data analysis steps started with gathering the raw data. After the data was gathered, the researcher repeated reading the data to ensure that the data matched with the supporting data, such as the results of participants' stories. Then, reducing the data to find the critical information related to the topic. Lastly, the researcher does thematically coding by highlighting the data that matched the topic and categorizing the data by theoretical coding or linking the data with the theoretical concept.

4. FINDINGS AND DISCUSSION

The data presented in line with the research question mentioned in the introduction and analysis procedure stated in the method section. In starting retell the experiences of participants, they were first asked about their background:

Table 1.1 Teachers' profiles

No	Pre-Service Teacher	Sex	Age
1.	P1	Female	19
2.	P2	Female	20
3.	P3	Male	20

The findings are presented according to cognitive blockages formed from old myths and false beliefs that emerging in this study. The categories are:

4.1. The need for students to do peer reviewing

Students can utilize peer review as a structured way to provide feedback on their work and evaluate their peers' work. Beside the artificial intelligence (AI) provides the automatic feedback, the students declared that they need the feedback from friends:

"I need a peer review from a friend because my friend's suggestion is helpful in giving another point of view about the writing I have made. As can be understood or not, whether the sentences are connected/related, grammatical errors and others." P2

Another participant emphasized that peer can help to correct word choice in sentences

"Yes, I need to do a peer review with my friend. We detect each other, correct each other, and try to give each other positive and acceptable suggestions for our results. For example, if changing a word results in an inappropriate context, you don't need to change it." P1

P1 and P2 argue that they need to do peer reviewing to gain better suggestions. They expect that by reviewing each other work, they can revise their writing due to the recommendations they got after the peer review activity. On the other hand, P3 believed that peer review activity could gain feedback very detail:

"Yes, peer review with friends is needed because we can get detailed feedback from friends. Such as writing context, punctuation, ambiguous sentences, and explanations that are out of the topic or context"

From the explanation above, the participants believed that they need to involve in peer reviewing process actively. Pre-service teachers are exposed to a wider variety of viewpoints than only that of their teacher or lecturer through participating in peer review and getting comments from peers. Undoubtedly, one of the key advantages of peer review is the capacity to guarantee that students receive input from a variety of sources. Students are required to evaluate, clarify, and occasionally correct one other's work as part of the review process (MacArthur, 2007). This can enhance the reviewers' knowledge and comprehension of the subject matter and aid in the growth of sophisticated critical thinking and higher-order cognitive abilities (Topping, 1998). In conclusion, peer review contributes to help pre-service teachers to provide better writing

4.2. Considering the feedback before accepting it

When students revise with feedback, they may not only improve the current piece but also develop general writing skills and learn to self-evaluate their writing. Before revising a text, student writers had to be first aware of the conflicts between their first drafts and peer corrections and suggestions (MacArthur, 2007). P1 and P2 consider the feedback that given from their peers. As example, the P1 stated:

"I reconsidered some of my friends' suggestions. I re-evaluate whether my friend's suggestion is following the writing rubric or not. After I match a friend's suggestion with the rubric, then I can decide whether my work needs to be revised or not".

Even, P2 decide to reject the suggestions from peer. She declared:

"I do not take the advice of my friends, which I consider not fit the knowledge that I understand. For example, my friend gave suggestions for improving grammar in writing. The advice given changed the context of the sentence I wrote. So I rejected the suggestion."

Peer review can improve students' critical thinking at a higher level because metacognitive is involved during peer review. Both peer reviewers and reviewees have knowledge and skills considered during the peer review process (Fathi & Shirazizadeh, 2019). The cognitive conflict arises via two peers or more. The peer should have clarified whether they agreed or disagreed with their corrections or suggestions. The writers could make revisions to their texts based on agreement or disagreement. By combining peers' corrections and advice with one's ideas, one constructs new meanings and produces good writing.

5. CONCLUSION

In this narrative study, the researcher examined cognitive conflict experiences during peer assessment. The constructivism principle that students are the centre is manifested through peer assessment, which transforms the conventional teacher-centred and teacher-dominated teaching paradigm. Some implications from the study's findings could be drawn. First, students need to do peer review as the way to gain additional feedback clearly from friends. Second, students are becoming aware of cognitive conflict is the first step in peer assessment. Before revising a text, pre-service teacher as a student had to be first aware of the conflicts between their drafts and peer corrections and suggestions. Lastly, it was important for a student writer to clearly express his agreement or disagreement to peers' corrections and suggestions. With agreement or disagreement, a student writer could take actions to revise text.

There are some limitations in this study that require further research. For example, the researcher did not examine student motivation as a holistic construct and ignored related motivational beliefs. Therefore, future research should examine the impact of peer-assessment activities on students' language mindsets and related motivational beliefs. Secondly, the researcher did not provide additional data (e.g., photo, task, scale) to support the narrative data based on participants' stories. Therefore, further study is recommended to provide more complete data.

REFERENCES

Bowman, E. A., & Sartre, J.-P. (2003). Sartre on Munich 1972. *Sartre Studies International*, *9*(2), 5–8. http://www.jstor.org/stable/23511144

Boud, D., Cohen, R., & Sampson, J. (1999). Peer learning and assessment. *Assessment & evaluation in higher education*, *24*(4), 413-426.

Barak, M., and Y. J. Dori. (2009). Enhancing higher order thinking skills among inservice science teachers via embedded assessment. J*ournal of Science Teacher Education 20*(5), 459–474. doi:10.1007/s10972-009-9141-z

Bloxham, S., & Boyd, P. (2007). Developing Effective Assessment in Higher Education: A practical guide. Berkshire: Open University Press.

Barkhuizen, G., Benson, P., & Chik, A. (2014). *Narrative inquiry in language teaching*. In Routledge.

Dale, R. (2016). The return of the chatbots. *Natural Language Engineering, 22*(5), 811–817. doi:10.1017/s1351324916000243

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems, 49*(1), 5–22.

Falchikov, N. (2007). *The place of peers in learning and assessment.* In Rethinking assessment in higher education. Routledge.

Fathi, J., & Shirazizadeh, M. (2019). Fostering self-regulated learning of Iranian EFL students: An investigation of the effect of self and peer assessment in L2 writing. *Foreign Language Research Journal, 9*(1), 123–146.

Freud, S. (1987). The origin and development of psycho-analysis: First and second lectures. *The American Journal of Psychology*, *100*(34), 472–488. https://doi.org/10.2307/1422690

Gielen, M., & Wever, B. D. (2015). Scripting the role of assessor and assessee in peer assessment in a wiki environment: Impact on peer feedback quality and product improvement. *Computers & Education 88*, 370–386. doi:10.1016/j.compedu.2015.07.012

Lai, C. L., & Hwang, G. J. (2015). An interactive peer-assessment criteria development approach to improving students' art design performance using handheld devices. *Computers & Education 85*, 149–159. doi:10.1016/j. compedu.2015.02.011

Li, H., Xiong, Y., Hunter, C. V., Guo, X., & Tywoniw, R. (2019). Does peer assessment promote student learning? A meta-analysis. *Assessment & Evaluation in Higher Education,* 1-19.

Liu, N. F., & Carless, D. (2006). Peer feedback: The learning element of peer assessment. *Teaching in Higher Education, 11*(3), 279-290.

Lo, Y.Y., Fung, D., & Qiu, X. (2021). Assessing content knowledge through L2: Mediating role of language testing on students' performance*. Journal of Multilingual and Multicultural Development.* doi:10.1080/01434632.2020.1854274

Lundstrom, K., & Baker, W. (2009). To give is better than to receive: The benefits of peer review to the reviewer's own writing. *Journal of Second Language Writing, 18*, 30–43.

MacArthur, C. A. (2007). *Best practice in teaching evaluation and revision*. In S. Graham, C. MacArthur, & J. Fitzgerald (Eds.), *Best practice in writing instruction*. NY: Guilford

McMahon, T. (2010). Combining peer-assessment with negotiated learning activities on a Day-Release Undergraduate-Level Certificate Course (ECTS Level 3). *Assessment & Evaluation in Higher Education 35*(2), 223–239. doi:10.1080/02602930902795919.

Montanari, S., Simón-Cereijido, G., & Hartel, A. (2016). The development of writing skills in an Italian-English Two-Way Immersion Program: Evidence from First Through Fifth Grade, *International Multilingual Research Journal, 10*(1), 44-58.

Thorne, S. L. (2017). *Editor's Introduction to Language, Education, And Technology*. In S. L. Thorne & S. May (Eds.), Vol.9: Language, Education, And Technology. Encyclopedia Of Language And Education, 3rd Edition. New York: Springer

Tian W., Louw S., Khan M. K. (2021). Covid-19 as a critical incident: Reflection on language assessment literacy and the need for radical changes. *System 103*. doi: 10.1016/j.system.2021.102682

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of educational Research, 68*(3), 249-276.

Topping, K. J., Smith, E. F., Swanson, I., & Elliot, A. (2000). Formative peer assessment of academic writing between postgraduate students. *Assessment & evaluation in higher education*, *25*(2), 149-169.

Topping, K. J. (2009). Peer assessment. *Theory into practice*, *48*(1), 20-27.

Topping, K. J. (2010). Methodological quandaries in studying process and outcomes in peer assessment. *Learning and instruction*, *20*(4), 339-343.

Topping, K. (2018). *Using peer assessment to inspire reflection and learning*. NY: Routledge

Tsai, Y. C., and M. T. Chuang. (2013). Fostering revision of argumentative writing through structured peer assessment. *Perceptual and Motor Skills 116*(1), 210–221. doi:10.2466/10.23.PMS.116.1.210-221.

Yeh, H.-C. & Tseng, S.-S., (2020). Enhancing multimodal literacy using augmented reality. *Language Learning & Technology, 24*(1), 27–37. https://doi.org/10125/44706

Zhao, H. (2018). Investigating teacher-supported peer assessment for EFL writing. *ELT journal*, *68*(2), 155-168.