

## Eclectic Approach to Improve Software Engineering Students' Research Article Writing Performance

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### Abstract

Writing a research article in English to be published in good journals is crucial for university students. Prior studies assessing practices for the goal however focused mostly on scrutinizing single methods, whereas inquires of incorporated strategies or eclectic approach on improving a learner's quality of English scientific writing genre still limited on the genres simpler than research article, as the higher scientific writing genre. This case study conducted using Qualitative method for data collection and analysis aims to explore how an eclectic approach has revamped scholarly texts written by 56 university students in Software Engineering learning English as a Foreign Language (EFL). The finding of this study revealed an eclectic approach merging Project-based Learning (PBL), Flower-Hayes' process cognitive writing model and Holistic Flipped Classroom (HFC) could productively affect students' writing products indicated from the increasing quality of their drafts throughout the writing stages. The conclusion is the eclectic approach integrating PBL, HFC and Flower and Hayes' cognitive writing model can be considered to apply for other research article classes as long as the students have relatively similar English skill background with the participants of this study.

**Keywords:** Cognitive, Eclectic Approach, Research Article Writing

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### INTRODUCTION

University students should have a competence of writing a research article. The first rationale is producing a scientific report to contribute for the progress of the student's field of study is among the soft skills expected to be acquired. As (Pulungan, 2016) observed, the significance of a research article writing skill for university students was derived from the requisition for disseminating their scientific queries through a written medium as the official representation of their final learning processes. The second reason is in contemporary higher education, the demand for academics to increase their publication output is growing (Olszewska & Lock, 2017). Then, students should be able to write a research article because the ability serves as outlets for their self-expression and self-reflection boosting a "potential in developing skills for communication, critical thinking, self-learning, self- and social awareness, empathy, and sensitivity to cultural differences" (Hashemi & Mirzaei, 2015). Finally, as Politton and Hadiyanti (2019) highlight, university students must be equipped with writing competencies training their

critical and logical thinking skills like research article since it is vital to generate high qualified future employees competing in workplaces.

As a piece of scientific writing genre, good research articles should lead to quality publications in which quality publications as media for scholarly works are usually circulated in English (Pradeep, 2022). As (Adnan & Purwo, 2022) argued, disseminating research findings in English as an international language would expand knowledge and increase researchers' participation in world academic conversation as they could contribute 'unique' perspectives specific to their social, cultural and political contexts. In that regard, university students also should be able to report their research in English.

However, writing a research article, especially in high quality in the most spoken international language, English is far from a mediocre task. Writing a research article is a complex cognitive process of planning, translating, reviewing and monitoring involving a number of sub-processes, such as generating and organizing ideas retrieved from long-memorized relevant information to create a meaningful structure of a text and goal-setting designed by the writer; putting ideas into visible language; evaluating and revising (Flower & Hayes, 1987). This activity requires the writer be trained to systematically evaluate and/or show monitored progresses, providing the basis for research writing skill. Arsyad et. al (2019) particularly found a tendency that one factor hindering the writers to produce a research text in adequate quality was the complex process for establishing a research territory sufficiently revealing the gaps leading to niches in their findings. Rochma et.al (2020) pointed out managing the writing process and linguistics resources remains an issue. As a result, getting a research article published in a reputable journal in English is even more challenging, particularly for 'multi-lingual scholars' (MLSs) (Adnan & Purwo, 2022).

In that connection, university students studying English as a Foreign Language (EFL) and/or whose major is non-English limiting their opportunities to have English speaking environment exposure should achieve these two key objectives to create a research article potential for quality publication: 1] be able to report their scientific investigation according to internationally standardized research article genre; and 2] be capable of writing the research article using scientific conventions in English.

Bibliography for effective teaching or learning strategies for assisting EFL students at university to produce high quality research articles have been published. (Lumpkin, 2015) claimed Reflective Teaching would empower students to advance their research text quality. (Yelay, 2017) recommended advanced academic writing classes help increase students' research writing quality. (Girgensohn, 2018) looking at the experiences of 16 writing centre tutorials in Europe shared Collaborative Approach was effective to help students deal with difficult stages of cognitive process in writing a research article leading to students' writing performance enhancement. (Li et al., 2020) showed localized ESP genre-based pedagogy enhanced the ability of university students to yield scholarly documents. (Teng & Zheng, 2020) concluded Self-Regulated Learning (SRL) instruction boosted students' inner motivation, self-efficacy and performance heightening their research writing quality. (Van der Loo, Krahmer & Van Amelsvoort, 2018; Andriani, et.al, 2022) reached a common finding highlighting 'Repeating Revisions' strategy in a long run particularly linguistics aspects such as editing the spelling, semantics and narrative style should be the focus of non-native English writers to improve their articles. Sturm (2016) in a case study applying the triangulation approach by observing collaborative writing tasks, analyzing written texts, and conducting structured individual interviews covering both retrospective and prospective parts on the other hand suggested only limited revision in a writing process. Her investigation concluded one's writing quality relied on his or her relatively extensive knowledge about writing and of himself or herself as a writer. (Aluemalai & Maniam, 2020) examined in a cross-sectional study with 50 undergraduate English as Second Language (ESL) students as samples discovered

planning strategies were the key for successful ESL writing classrooms. The significance of revision stage in producing a good writing was re-emphasized through the study by Cotos, Huffman, and Link (2020) exploring the importance of a genre-based and discipline-specific automated feedback in students' revising process to improve their research writing.

All these studies, scrutinizing best practices applied by EFL students to produce scholarly texts in high quality, have lacked discussions for the possibility that the research article writing process for EFL university students majoring in non-English such as Software Engineering might be delivered using multi-methods or eclectic approach to anticipate unresolved shortcomings usually popping up within a single method-based process. As the name, an eclectic approach is a learning style for a second or a foreign language merging various methods and approaches of teaching a language depending on the lesson objectives and individual differences of students (Iskan, 2017). As proposed by Suparman, 2017 cited in Sundari and Febriyanti (2021), its flexible system enabling a teacher/an instructor to blend varied teaching and learning options adjusted to his or her students' learning characters and backgrounds so as to make target learning accomplished in an easier, more pleasant, and more enjoyable way makes this approach more effective than a single method in teaching and learning process.

However, as Al-Khasawneh (2022) explored in his systematic literature review, inquires of using eclectic approach on teaching scientific writing are scarce because the subject tend to be analyzed in eclectic approach-related studies was teaching English in general. Some scientific papers on using eclectic approach in teaching and learning writing in English are these followings. (Atikah, 2018) in her small-scale qualitative study using class observations, interviews and online focus group discussions revealed a good model for effective teaching strategies in writing class was a blending of process-based writing approach, students' oral peer feedback, self-criticism sessions, lecturer's constructive feedback, personal and one-to-one consultations apart from study hours in class, varied independent and guided writing methods, and many general teaching strategies involving the students. Politton & Hadiyanti (2019) utilizing a critical literature review in their qualitative research offered eclectic manoeuvre; mixing collaborative writing discussions, intensive / extensive reading and cognitive process writing instructions to overcome higher education learners' writing problems. Ismiati and Pebriantika (2020) observing the needs of their research participants recommended a design of an eclectic learning method combining guided learning, diary writing, group presentation strategy and collaborative learning with additional credit hours for certain writing classes to increase the teaching impact on students' academic writing skills. Krisbiantoro and Pujiani (2020) through quasi-experimental research had the main finding that the eclectic method encompassing cooperative learning, problem-based learning approach, and guided-writing was more effective than the scientific approach to promote non-native English speaking students' academic writing performance. After a descriptive case study of eclectic practices in EFL writing instruction at a university in Indonesia, Sundari & Febriyanti (2021) reported EFL learners tended to positively perceive the eclectic approach in writing instruction in which the eclectic approach should consist of process approach, genre-based approach and modified jigsaw, modified SQ2R as well as group discussion.

Nevertheless, the writing products subjected to those studies were simpler writing genres, such as narratives, recounts and argumentative texts than research article written by mostly non-university students. In other words, though eclectic approach-related investigations have been performed, research on how an eclectic approach affects EFL tertiary level students majoring in non-English in reporting their research process and findings using standard research text template have been rare. Thus, a study inquiring teaching-learning methods and strategies best combined as an eclectic approach to encourage EFL university students in Software Engineering to meet

their university expectation in matter of scientific texts' production and examining the impact of the approach on students' research article writing became evident. In that regard, the research question driving this study were:

- 1] What were the learning strategies and teaching methods need to be incorporated as an eclectic approach helping Software Engineering students to produce a research article possible to be published in a good journal?
- 2] What was the impact of the approach on students' progress of writing quality?
- 3] What was students' most significant weakness identified during the writing process using the eclectic approach?

The significance of this research is to yield an eclectic approach effective for other language instructors to replicate when training the students possessing similar learning and knowledge background in producing a research article genre potential for publications. What would be this study's contribution to discussions about eclectic approach for teaching and learning English was another specific set of teaching instructions and learning methods/strategies proven best integrated to encourage and enable EFL university students majoring in non-English such as Software Engineering to improve their research article writing in English. It is an evidence-based intervention effective for facilitating university students, relatively having similar critical thinking, inference skill level, and knowledge of English grammar, lexical, syntax and text organization to write a research article.

## **METHOD**

A case study design of qualitative research paradigm was utilized in this study. The rationales for selecting the design were first, characteristics inherent in this study were parallel with case study design theories. The second rationale for selecting this design related to its intent to collect and analyze the data for exploring the students' progress. The last rationale for selecting the design was this study put an emphasis on exploring rather than merely describing what would be the best practice for teaching the students on writing a research article. The aspects becoming the central point to explore was also close to assumptions commonly articulated in qualitative paradigm (Creswell, 1994,162).

### **The Subject of the Study**

The subject of this study consisted of research article manuscripts written by 56 Software Engineering students at their fourth semester selected in a purposive way for convenience reason. The convenient selection was used as this was qualitative, so the research article manuscripts best providing the hints to answer and explain the research questions were purposefully selected. The students as research article manuscripts' producers already passed essay writing classes and critical review writing essay indicating their relatively equal skills in producing a long text incorporating their writing synthesis and reading summaries in English. In the writing process, they were grouped into 28 writing pairs and each was instructed to choose a research topic in information technology.

### **Time and Place Setting**

The setting was a Software Engineering study program at an IT university in a remote area where the study was conducted in one semester.

### **Instrument and Procedures**

The researcher was the primary instrument collecting the data (Miles and Huberman, as cited in Creswell, 1994, p.148). The data were sourced from the students' manuscripts and the lecturer's class observations. The procedure encompassed observing students in planning, generating sentences and paragraphs, the lecturer's weekly evaluating followed by students' revising based on the lecturer's feedback according to Flower and Hayes' cognitive writing stages where the students adopted project-based learning (PBL) in writing their manuscripts and the lecturer gave teaching instructions and feedback in holistic

flipped classrooms (HFC). Despite the PBL method employed by students when undergoing the writing cognitive process, peer feedback was not highly encouraged. As theorized (Knight et al., 2020), feedback from a professional rather than from peers enable the writers to reflect on what they do and how they can by addressing the gap between their performance and educator's expectations. In this study, peer feedback was believed to be reducing students' writing quality due to their competence as novice researchers, relatively having similarly minimum experience in writing a research article.

### **Data Collection**

The data were sourced from students' writing drafts and the lecturer's class observations. The researcher as the primary instrument collecting the data (Miles and Huberman, as cited in Creswell, 1994, p.148) designed 3 protocols in line with the theory of (Creswell, 1994) to record descriptive and reflective observation notes from her data source; students' manuscripts from the first draft through the final text in 10 weeks, students' responses to a closed questionnaire, and the lecturer's observations on students' writing process in holistic flipped learning (HFC) classes.

### **Data Analysis**

The technique for data analysis was grounded on Miles and Huberman's theory cited in Creswell (1994, p.148), which was by understanding the meaning of voluminous amount of information collected from the students' writing drafts as the subject of study. The descriptive output leads to categories' development to reduce the vast information and to get the results displayed in a tabular of information. The information taken from the students' writing drafts as the data needed to be analyzed focused on the increasing or decreasing quality of Introduction, Methods, Results and Discussions (IMRaD) as standardized systematic structure of scientific journal accepted worldwide (Jalongo & Saracho, 2016; Pradeep, 2022) the students performed in their weekly drafts. The analysis of students' elaboration of these standard research article components indicated how eclectic approach affected students' research article quality leading to the finding how the learning strategies and teaching methods merged as the eclectic approach helped students carry out their writing process according to Flower and Hayes' cognitive writing model, from the planning stage through final cycle of evaluating and revising stage. Furthermore, each research article component was assessed with a grading rubric developed based on the modified IELTS Writing 2 Task band descriptor with this classification: Poor (0-3), Fair (4-5), Good (6-7), Excellent (8-9). IELTS Writing 2 Task descriptor was selected due to its quality as a global assessment tool to indicate one's academic writing level. All data were analyzed to provide clear and accurate findings. The data indicating the impacts of eclectic approach on students' writing performance through their quality dynamics of their drafts were displayed in percentages, described and compared to students' reflection of their learning experience upon the article writing process and the lecturer's observations on students' writing process.

### **Verification strategies**

The objectivity and truthfulness of the findings in this study were sought by verification steps rather than through traditional validity and reliability measures. In order to confirm the reliability and internal validity of this study, the triangulation method was applied by comparing the progress students indicated through their writing drafts to the lecturer's observation of their behavior during the writing process and to the analysis of students' responses to a closed questionnaire distributed online by using Google at the end of the research article writing course. The questionnaire asked students to record their learning experience, thoughts and feelings to chronicle how they had perceived the writing process using the eclectic approach.

## **RESULT AND DISCUSSION**

### **What Compose the Eclectic Approach for EFL Software Engineering Students in Writing Research Article in English**

The learning strategies selected for the students to author their article were Project-Based Learning (PBL) combined with Flower and Hayes' cognitive writing process model, while the teaching method was applied in a form of Holistic Flipped Classroom (HFC).

PBL concept was implemented by grouping students into writing pairs. Each pair collaboratively worked on their writing following Flower and Hayes' model encompassing the planning, translating/generating sentences, and reviewing (being evaluated and revising) under close supervision of the lecturer as the process monitor. To put differently, every student joined their writing partner by choice together carrying out the writing process for their research article in line with Flower and Hayes' stages from brainstorming the topic, planning what to include on each research article component, generating the sentences, discussing what to be revised based on the lecturer's feedback, making revisions, peer checking and rechecking until the draft was complete and ready to submit.

While students wrote their texts in their PBL group referring to Flower and Hayes' cognitive process of writing model, they were directed by the lecturer in holistic flipped classroom (HFC). Chen, et al (2014) formulated HFC model as a coalition of progressive activities, engaging experiences, and diversified platforms added to flipped classroom approach encouraging flexible environments. Unlike classic flipped learning method focusing on asynchronous mode, all learning spaces in HFC are treated as classrooms supported and monitored through synchronize modes. HFC require the students that they upload their drafts on cloud but at the same time show to their lecturer as their research article instructor how they conducted their study using applications allowing synchronous interactions.

The HFC essentially consisted of asynchronous sessions followed by synchronous meetings. Before starting every new topic, in two days earlier the lecturer had uploaded and shared her teaching video regarding the topic on YouTube to all writing teams, while the written materials in lecture notes and Powerpoint slides along with lecturing audios were submitted to the Whatsapp Group created for online research article class, the university's learning management system (LMS), and Moodle-based learning system. The reason for submitting the non-video materials to numerous online storage was to ease students to access them without being impeded with their Internet connection condition. On scheduled meetings, students in their writing pairs and the lecturer had synchronous interactions using Zoom or Google Meet application. In synchronous meetings, the lecturer gave instructions and directions, responded to any questions related to students' on-going research manuscripts, and monitored discussions among members within the writing pairs upon the writing process. Highlighted points discussed during the synchronous session were recorded and shared with the writing teams via YouTube. After the end of synchronous session, each writing pair had to continue to work on the draft they had composed in the synchronous session in 3 days and submitted their complete draft to the lecturer in the Whatsapp group. Within the time, the writing pairs were encouraged to discuss any questions related to their draft revision process with the lecturer using Whatsapp group or if needed by Zoom or Google Meet. The lecturer evaluated the draft by providing her feedback on the parts needing revisions or corrections and returned the assessed drafts to the students by the Whatsapp group in 3 or 4 days due the next class. The lecturer sometimes added her feedback by Whatsapp's voice note or chat for parts missed to cover in the written feedback.

### Eclectic Approach Impacts on Software Engineering University Students as EFL Learners in Writing English Research Article

How eclectic approach influenced students in enhancing their writing performance was indicated by their progress after incorporating PBL-HFC within Flower-Hayes' cognitive process of writing model on each of these standard research article components (ImRaD). The extent of students' progress was quantified in percentages of students' manuscripts in a certain period managed to demonstrate advancing quality of their article contents. The contents were analyzed by evaluating students' performance of developing the ImRaD features and their linguistics skills covering their lexical resources, cohesive devices and grammar performance used in their article.

Students' writing progress on sub-components of the Introduction as the first feature of a research article can be seen from Table 1 - 3:

Table 1. How eclectic approach impacted students' developing the background

No	Level	Band	% students improving their writing quality indicated from their manuscript in 4 weeks (%)			
			1	2	3	4
1.	Excellent	8-9	3.57	3.57	3.57	7.14
2.	Good	6-7	21.43	42.81	42.81	57.14
3.	Fair	4-5	53.38	42.86	53.62	35.72
4.	Poor	0-3	21.62	10.76	0	0

Table 1 shows on the first attempt, more than 50% of the students, which was 53.38% showed scientific potentiality of their topic of choice in an unsatisfying way with 21.62% of them indeed failed to demonstrate that aspect. It took 3 weeks evaluations and revisions until such proportion turned the other way in which 57.14% of these students exhibited good reasons why their topic was significant to inquire with none at poor level. Still, despite the total 4 weeks since the first draft, 35.72% stayed in ability to show fair quality in providing relevant contexts based on preliminary archival studies for the significance of their research.

Table 2. How eclectic approach impacted students the research gap identification to formulate the research questions

No	Band	% students improving their writing quality indicated from their manuscript in 4 weeks				
		1	2	3	4	
1	Excellent	8-9	0.0	0.0	0.0	0.0
2	Good	6-7	7.14	10.76	35.71	35.71
3	Fair	4-5	28.57	57.14	57.14	64.29
4	Poor	0-3	64.20	32.10	7.15	0.0

Table 2 shows on the first draft, 42.85% of students fail to meet the purpose of review of literature synthesizing earlier scholars' works to seek for the research gap, along with 39.28% lacking the scholarly works synthesizing skills, though 14.3% and 3.57% yield

good-to-excellent synthesis. After 3 weeks, 50% of the writing pairs could improve their writing synthesis up to good quality, though 46.43% remain at average quality.

Table 3. How eclectic approach impacted students' ability to determine appropriate research design and methods

No	Level	Band	% students improving their writing quality indicated from their manuscript in 4 weeks			
			1	2	3	4
1	Excellent	8-9	3.57	3.57	3.57	3.57
2	Good	6-7	14.3	37.5	44.64	50
3	Fair	4-5	39.28	57.14	50	46.43
4	Poor	0-3	42.85	1.79	1.79	0

Table 3 shows 64.20% teams had bad analytical skill when having to interpret their statements of research problem and study objectives to determine appropriate methods for gathering and analyzing their data. Three revisions, online briefings and tutorials only managed to impact well on 35.71% teams whereas 64.29% remained at fair level only rising from 28.57% at the start. None of the students were able to reach excellent quality in developing their research design despite 3 weeks evaluation and revision.

Table 4. How eclectic approach impacted students' elaborating their research findings

No	Level	Band	% students improving their writing quality indicated from their manuscript in 4 weeks			
			1	2	3	4
1	Excellent	8-9	0.0	0.0	0.0	3.60
2	Good	6-7	14.30	14.29	17.88	39.26
3	Fair	4-5	46.41	50.00	46.41	50.00
4	Poor	0-3	39.29	35.71	35.71	7.14

Table 4 summarizes on the first manuscript, 39.29% of the students poorly perform in describing figures displaying their inquiry result data followed by 46.41% at fair level only. After three revisions the teams in poor quality stage much decreased into 7.14%, while the well-performing ones multiply from 14.30% into 39.26%, indeed 3.60% reached outstanding performance.

Table 5. How eclectic approach influenced students' performance in discussing their findings

No	Level	Band	% students improving their writing quality indicated from their manuscript in 4 weeks			
			1	2	3	4
1	Excellent	8-9	0.0	0.0	7.14	17.86
2	Good	6-7	0.0	1.78	14.29	75.0
3	Fair	4-5	42.86	44.62	57.14	3.57
4	Poor	0-3	57.14	53.60	35.71	3.57

Table 5 shows subsequent to three revisions in 3 weeks, on the fourth manuscript, 75% managed to elaborate the features that had to be discussed at good level, while teams



reaching excellent quality was also leveling up to 17.86%. The number of those at fair stage was in balance proportion to that at the poor quality, 3.57%.

### **Students' most significant weakness in the writing process**

The weakness was not directly related to the lack of the learning-teaching methods and strategies merged as the applied eclectic approach but more likely because of the research writing genre complexity. First, the writing synthesis (literature review) task objective using previous studies to draw the research gap in the Introduction so that the research questions or hypotheses could be formulated was hard to achieve despite three cycles of revisions. (Luo & Kiewra, 2019, p. 194) pointed out writing synthesis is a multi-layered, complex process requiring students to balance their changing roles as source reader, note taker, text writer, and text reviser. Secondly, on Results, students were confused of selecting relevant findings answering their research questions. Then, in the first attempt of discussing their research results, they simply reiterated the findings already described in the Results. They had to go through several revisions before at last being able to confirm the validity and reliability of their findings and data collection, enabling them to show if their results filled the research gap and indicated some novelty.

Each discussed component apparently needs backing up with longer time at Flower and Hayes' reviewing stage encompassing the lecturer's evaluation and the students' revising sub-processes in holistic flipped learning environment and project-based learning to make it at good level. If the next students have similar English proficiency background and preparation to participants of this study, they should be given 4-5 weeks to employ Flower and Hayes' writing process from planning to reviewing stages, for Introduction, Results and Discussions each. So, total time for students to produce the research article may reach more than 12 weeks. If the time continues to be the hindrance, the number of students in the PBL group must be doubled from 2 to 4 students, compelling them to have some initiative and be independent in the reviewing stage of cognitive process through peer monitoring. The lecturer's monitoring instead of peer feedback must continue to be stressed because as disclosed by (Yu, 2020) in a study to non-native English graduate students in a university in Macau, students tended to perceive that giving peer feedback is challenging, stemming from their concerns with limited linguistic proficiency, usefulness and correctness of their feedback as the amateurs and feeling inappropriate to put criticism on their own classmates.

Time extension in the application of this eclectic approach also assisted students' to indicate linguistic improvement. Students' first and second manuscripts tended to show problems with grammatical range and accuracy along with lexical resources. In grammar, they had problems with fragment sentences, run-on sentences and use of proper articles and determiners. Also, they needed to revise each section of their research article manuscript for several times since they rather fell flat to put words in correct order, making it hard to understand for the readers. Tenses were well-applied due to enough tutorials on using correct Tenses for each section of the research article.

On lexical resources, as the beginner writers, they were often confused of opting correct word choices. They avoided using idioms in their writing, though as cited from (Simpson & Mendis as cited in Miller, 2020) selective use of idioms can perform many functions in academic communication: describing and evaluating, emphasizing, paraphrasing, creating a sense of group identity, and marking a change of topic.

The problem with text organization represented by improper use of cohesive devices or transition markers usually occurred only in the first manuscript. Students quickly corrected the wrong cohesive devices on the following drafts as long as the feedback on the misuse was marked explicitly in their manuscripts.

The first question addressed in this study is what learning strategies and teaching methods to be integrated as an eclectic approach to encourage and enable Software Engineering students process their research article in English. The data show that Project-Based Learning (PBL) was applied by students when producing their research article text genre according to writing stages of Flower and Hayes' cognitive writing process model, while the teaching was carried out in Holistic Flipped Classroom (HFC). The rationales for choosing PBL to direct the students were as follows. First, prior literature stressed the advantages of PBL in various tasks including writing assignments. Secondly, PBL characteristics mixing the learner's ability and willingness to work independently both individually and cooperatively in order to reach a collaborative purpose has been trained upon the students since their first semester for almost all of courses they took so that they had got used to the learning strategy. Thirdly, PBL concept was agreed by the lecturer and the students to complete any tasks related to the research article production. Meanwhile, Flower-Hayes' cognitive writing process model was decided by the lecturer as students' guidance in writing their research article due to numerous findings noting the cognitive writing process pioneered by Flower and Hayes as the basis for novice writers to learn how to write effectively. This model has been developed and derived by many scholars since its inception into a general model known as a process approach. Then, the instrumental reason for choosing HFC model to deliver the research article writing class was inseparable from numerous advantages of traditional flipped classroom. Herreid and Schiller (2013) reported this approach provided students more time to make inventive researches. Students educated with this approach are encouraged to train their minds into active thinkers as they have chances to think within and out of class (Kellinger, 2012). Active thinking can be manifested by means of HFC approach since students can find more chances to discuss with their lecturers (Bergmann & Wadell, 2012). HFC model makes students able to access teaching videos whenever and wherever they want allowing them to learn at their own speed (Fulton, 2012), while supporting them when working in their project-based learning group as a team working (Milman, 2012). HFC is also available to be joined with various teaching strategies (Love, Hodge, Grandgenett & Swift, 2013).

The second question concerns how the eclectic approach employed has affected students' writing performance. The findings revealed the teaching and learning strategies composing the applied eclectic approach indicated encouragement generating students' harder efforts to improve important components of a research article in order to achieve the quality sufficiency for publication potential reflected by their continuous advancement of each research article component. This study shows the learning strategies composing the employed eclectic approach resulting in students' writing enhancement indicates close resemblance in characteristics of the learning tactics added to eclectic approaches observed in prior inquires. Findings from Atikah (2018), Politton & Hadiyanti (2019), Sundari & Febriyanti (2021) and Andriani, et.al (2022) likewise revealed the positive effects of process-based approach as an eclectic approach feature on the writer's text quality advancement parallel to that of this research showing the cognitive writing process model following Flower and Hayes' stages productively contributed to providing prescribed guidelines easing students to continue improving their research article manuscripts. In line with Sundari and Febriyanti (2021)'s emphasis on genre approach as part of eclectic approach allowing writers to meet ideal features of research article and Andriani, et. al (2022) about the positiveness of students' ability to improve writing components in the writing process, focus on directing students to achieve research article genre writing task was inseparable from the students going through the cognitive writing process especially in revising sub process of Flower and Hayes' reviewing stage. Furthermore, as Ismiati & Pebriantika (2020) as well as Krisbiantoro & Pujiani (2020) observed that an eclectic design fruitful students' academic writing includes cooperative-collaborative learning and guided learning with additional credit hours for building

certain writing components, this scholarly project suggested the significance of collaboration inherent in the PBL employed as students' learning strategy upon the writing process and lecturer monitor throughout students' drafting process in line with writing stages opted for them, including linguistics aspects such as editing the spelling, semantics and narrative style.

This study also exposes similarities on several aspects to what were explicated in prior investigations on the impacts of particular learning strategy or teaching method on the writing. As found by Van der Loo, Krahmer & Van Amelsvoort (2018), and Andriani, et.al (2022) related to positive correlation between revising stage and writing quality, students in this research became to achieve the sufficiency of their research article by conducting multiple draft revisions. Identical to Yelay (2017)'s recommendation on the effect of more academic writing classes on enhancing text quality, regular schedules and online consultation classes if required in HFC setting in this study apparently endorsed students to keep modifying essential research article components in their drafts though remained moderate.

This work leading to HFC impacts on students' writing displays what has been revealed in Teng and Zheng (2020) about the influence of self-regulated learning (SRL) mode of students' writing quality. Despite being guided throughout composition process, students learned to rely on their independence and wisdom in time management to achieve their draft in revising boosting their self-efficacy important in SRL. In 2020, two studies searching for novel teaching instructions to empower the non-English native students to write a research paper. The first demonstrated localized ESP genre-based pedagogy was used by the lecturers to supervise Chinese university students to yield a scholarly document (Li et al., 2020). Nonetheless, not one did the evidence for the instruction efficacy and the students' learning deserve it to be adopted by the next learners possessing equivalent English writing skill background was presented in the research. The research of the newer study concluded self-regulated learning (SRL)-based instruction could boost students' inner motivation, level of and performance of self-efficacy (Teng & Zheng, 2020).

This study differs in teaching strategies opted for deriving the eclectic approach. In this study, teaching methods and instructions were a blend of various online teaching methods either asynchronous or synchronous where the Internet technology became fundamental. The teaching methods integrated were more modest but strategic unlike infinite number of teaching strategies incorporated in the eclectic approach in Atikah's study (2018). Furthermore, in this research, students' feedback was deemed to cause a pale impact on students' writing quality distinguished from Atikah's uncovering that students' feedback was necessary for their writing performance, though this investigation resembled her evidence of the lecturer's feedback encouraging students' revising efforts.

More differences have appeared between this study and previous authors' works, though, once the raw data finished analyzing indicating the uniqueness of this research. First, unlike Lumpkin's research (2015) quite lacking of using protocols to analyze data for a comprehensive conclusion, multiple observations make the qualitative design that represent more comprehensive protocols from the lecturer's perspective and analysis of students' writing documents were applied in this study imperfect. The data triangulation encompassing the lecturer's thoroughly examining drafts of students and observing class activities along with students' exploring their journal writing experience was carried out to identify what was missing from the students' writing cognitive process resulting in obstacles to the students' level of progress in issuing at least a good quality of research article. Secondly, opposite results produced by (Pagliawan, 2017; Lindsay, 2018) only depicting the features of the research article claimed as the best strategies and hints for non-native English authors to produce a research article without suggesting a concrete teaching instruction, this study has included findings measuring the time allocation need

for other non-native English authors to improve their journal article writing skills. Third, this study discloses the flaws of novice authors observed by (Yelay, 2017) but also leads to the formulation of modified teaching method or instruction assisting to overcome the hindrances. This study was also opposite to what was unveiled by (Sturm, 2016) finding revision stage in the writing process did not influence sufficiently to the students' writing quality enhancement.

The last question addressed in this study is the weakness in students' writing process using the eclectic approach. These findings revealed that more time should be assigned to qualify students with evaluating, editing and revising their draft. The study shows the students have missed the marks on drafts 1-3, indicating their unsuccessful attempts to composing the article in the limited time, though they were directed to apply technology-enhanced inquiry strategies when writing, with the inquiry learning as the key to alter the ways of students think from convergent into divergent, building their learner's habit to make connections between ideas and discover other ways to view and solve problems. Nevertheless, the reviewing stage was found to have been poorly met despite three or four revision chances during the students' writing experience. Such low quality was inseparable from the fact that students were compelled to meet the features of two sections of the research article simultaneously in only 8 weeks.

Extended 4-hour allocation on the process of writing the literature review, results and discussions must be given an emphasis in the eclectic approach as this part bringing the writers to formulate research questions that meet international standard and basis for selecting the appropriate data collection and analysis methods leading to a research writing excellent for publications.

The verification method proved that the teaching in HFC involving plenty online applications' incorporation was proven effective as the eclectic approach incorporation. 79.2% of the students agreed online classes used to deliver lecturers, discussions, oral feedback and allow flexible interactions within members in the PBL team and with the lecturer had gifted them flexible time and options to build top-grade strategies to sharpen their writing quality.

It was observed as well that students succeeding to prove good quality in each research article writing component from their first draft tended to meet the writing objectives by applying more efficient strategies. The phenomenon is in tandem with the (Qin & Zhang, 2019, p. 405)'s work pointing high proficient students in writing had clearer meta cognitive knowledge of how to evaluate their writing process and weigh their expectations of themselves until they acquired the skills necessary for self-regulated, independent, or autonomous learning. Few limitations were detected. This eclectic approach is mostly drawn from a case study of average number of samples, so the next students should be likely to have similar characteristics to the students being the subject of this study to get successful result from an identical training method. Also, it should be borne in mind that the writing process carried out in collaborative setting may be incomplete as the sign for determining the quality of a student at individual level. Such limitation lays a reason for a future research to investigate how learners proceed when they must solve the scientific writing task alone rather than with team

## **CONCLUSION**

The conclusion drawn based on the research questions and categories of this research were 1) The researcher found some eclectic approach incorporating PBL-HFC and Flower-Hayes' writing model impacted positively and productively in enhancing the quality of research article written by non-English majored university students still learning English as a Foreign Language to be potential for accredited publications if the time for conducting archival study for elaborating the significance of the topic and literature review to build research gap for formulating novel findings potential provoking

research questions was allocated in 4 weeks with the instructor's evaluation sessions and students' revising classes online in PBL took place at least in 3 weeks. 2). The shortcoming should be modified for better delivery for other students includes more time allocation for revising stages especially for building the significance for the research topic, research questions and purposes, research design and research implications/novelty. Overall, this study lays a ground for a newly modified mixed teaching methods for non-native English authors at novice level to supply a more comprehensive report study, instead of merely describing the steps for achieving features for each journal component. The next students whose characteristics resemble with the participants in this study should be taught to produce a journal article with technology-enhanced collaborative inquiry learning in which specific amount of time for students to do the review should be added in the teaching course plan.

## REFERENCES

- Adnan, Zifirdaus & Arsyad, Safnil & Kaswanti Purwo, Bambang & Sukamto, Katharina. (2021). Perceptions of Indonesian multilingual scholars about preparing and publishing research manuscripts in international journals. *Studies in English Language and Education*. 8. 65-83. 10.24815/siele.v8i1.18969.
- Adnan, Z., & Purwo, B. K. (2022). Getting published in international journals: Perception of Indonesian scholars in linguistics and language education on the issues they face. *JOALL (Journal of Applied Linguistics and Literature)*, 8(1), 19-40. <https://doi.org/10.33369/joall.v8i1.21997>
- Al-Khasawneh, Fadi. (2022). A systematic review of the eclectic approach application in language teaching. *Saudi Journal of Language Studies*. 2. 1-11. 10.1108/SJLS-11-2021-0022.
- Aluemalai, Kalaivaani & Maniam, Mahendran. (2020). Writing Strategies Utilized by Successful and Unsuccessful ESL Undergraduate Students in Writing Classroom. *Journal of English Language and Culture*. 10. 10.30813/jelc.v10i2.2140.
- Andriani, Lati & Syihabuddin, Syihabuddin & Sastromiharjo, Andoyo & Anshori, Dadang. (2022). The Role of Writing Process Components and Cognitive Components in Improving the Quality of Narrative. *International Journal of Learning, Teaching and Educational Research*. 21. 88-106. 10.26803/ijlter.21.12.5.
- Atikah, D. (2018). Teaching Strategies in Writing Class: A good model in Islamic institution of Kendari, Southeast Sulawesi, Indonesia *The Asian EFL Journal* August 2018 Volume 20, Issue 8, pp. 265-278, available at: <http://www.asian-efl-journal.com>
- Bean, J.C. (2011). *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*, 2nd Edition. .... New Jersey, USA: John Wiley & Sons, Ltd
- Bergmann, J. & Waddell, D. (2012). To flip or not to flip?. *Learning and Leading With Technology*, 39(8).
- Chen, Y., Wang, Y., Kinshuk, & Chen, N. S. (2014). Is FLIP enough? or should we use the FLIPPED model instead? *Computers and Education*, 79, 16-27.
- Cotos, E., Huffman, S., & Link, S. (2020). Understanding graduate writers' interaction with and impact of the Research Writing Tutor during revision. *Journal of Writing Research*, 12(1), 187-232. <https://doi.org/10.17239/jowr-2020.12.01.07>
- Creswell, John. W. (1994). *Research Design Qualitative & Quantitative Approaches*. 143-169 Sage Publications Inc., California
- Fulton, K. (2012). Upside down and inside out : Flip your classroom to improve student learning. *Learning & Leading with Technology*, 39(8), 12-17.
- Girgensohn, K. (2018). Journal of academic writing. *Journal of Academic Writing*, 8(2), 11-23. <http://e-learning.coventry.ac.uk/ojs/index.php/joaw/article/view/472/698>

- Hayes, J. R., and L. S. Flower. (1987). "On the Structure of the Writing Process." *Topics in Language Disorders* 7 (4):19–30.0
- Herreid, C. F., & Schiller, N. A. (2013). Case Studies and the Flipped Classroom. *Journal of College Science Teaching*, 42(5), 62-66.
- Hashemi, Z., & Mirzaei, T. (2015). Conversations of the Mind: The Impact of Journal Writing on Enhancing EFL Medical Students' Reflections, Attitudes, and Sense of Self. *Procedia - Social and Behavioral Sciences*, 199, 103–110. <https://doi.org/10.1016/j.sbspro.2015.07.493>
- Iscan, A. (2017), "The use of eclectic method in teaching Turkish to foreign students", *Journal of Education and Practice*, Vol. 8 No. 7, pp. 149-153, available at: <https://eric.ed.gov/?id5EJ1137580>.
- Ismiati, Ismiati & Pebriantika, Erlin. (2020). Designing Strategies for University Students' Writing Skill. *Journal of Languages and Language Teaching*. 8. 8. 10.33394/jollt.v8i1.2210.
- Kellinger, J.J. (2012). The flipside: Concerns about the "New literacies" paths educators might take. *The Educational Forum*, 76(4), 524-536.
- Knight, S., Shibani, A., Abel, S., Gibson, A., Ryan, P., Sutton, N., Wight, R., Lucas, C., Sándor, Á., Kitto, K., Liu, M., Mogarkar, R. V., & Shum, S. B. (2020). A learning analytics tool for formative feedback on academic writing. *Journal of Writing Research*, 12(1), 141–186. <https://doi.org/10.17239/JOWR2020.12.01.06>
- Krisbiantoro, B & Pujiani, Tri. (2020) How Effective is Eclectic Method to Teach Academic Writing? *J-LEE*. Vol. 2 No. 01. <https://ejournal.uhb.ac.id/index.php/J-LEE/issue/view/47>.
- Lindsay, J. B. (2018). *A Practical Guide to Academic Writing and Publishing*. 2018 (February), 0–17. <https://doi.org/10.13140/RG.2.1.3117.2724/1>
- Li, Y., Ma, X., Zhao, J., & Hu, J. (2020). Graduate-level research writing instruction: Two Chinese EAP teachers' localized ESP genre-based pedagogy. *Journal of English for Academic Purposes*, 43, 100813. <https://doi.org/10.1016/j.jeap.2019.100813>
- Love, B., Hodge, A., Grandgenett, N., & Swift, A. W. (2013). Student learning and perceptions in a flipped linear algebra course. *International Journal of Mathematical Education in Science and Technology*, 45(3), 317– 324
- Lumpkin, A. (2015). Enhancing Undergraduate Students' Research and Writing. *International Journal of Teaching and Learning in Higher Education*, 27(1), 130–142. <http://www.isetl.org/ijtlhe/>
- Luo, L., & Kiewra, K. A. (2019). Soaring to successful synthesis writing: An investigation of SOAR strategies for college students writing from multiple sources. *Journal of Writing Research*, 11
- Milman, N. (2012). The flipped classroom strategy: what is it and how can it be used? *Distance Learning*, 9(3), 85- 87
- Miller, J. (2020). The bottom line: Are idioms used in English academic speech and writing? *Journal of English for Academic Purposes*, 43, 100810. <https://doi.org/10.1016/j.jeap.2019.100810>
- Olszewska, K., & Lock, J. (2017). Examining Success and Sustainability of Academic Writing: A Case Study of Two Writing-Group Models. *Canadian Journal of Higher Education*, 46(4), 132–145.
- Pagliawan, D. L. (2017). Feature Style for Academic and Scholarly Writing. *Academic Journal of Interdisciplinary Studies*, 6(2), 35–41. <https://doi.org/10.1515/ajis-2017-0004>
- Politton, M., & Hadiyanti, K. (2019). Enhancing University Students English Writing Skills on Content Area. *LLT Journal: A Journal on Language and Language Teaching*, 22(2), 146-155. doi:<https://doi.org/10.24071/llt.v22i2.1868>

- Qin, L., & Zhang, L. J. (2019). The development of a new instrument to assessment cognitive strategy knowledge about academic writing and its relation to writing performance. *Journal of Writing Research*, 12(2), 393–413.
- Rochma, A. F., Anita, T., & Ashadi. (2020). Rhetorical styles of Introduction in English language teaching (ELT) research articles. *Indonesian Journal of Applied Linguistics*, 10(2), 304–314. <https://doi.org/10.17509/ijal.v10i2.28593>
- Senkevitch, E., Song, W., Smith, A. C., & Marbach-Ad, G. (2011). Improving Scientific Research and Writing Skills through Peer Review and Empirical Group Learning *Journal of Microbiology & Biology Education*, 12(2), 157–165. <https://doi.org/10.1128/jmbe.v12i2.319>
- Sundari, Hanna & Febriyanti, Rina. (2021). The Eclectic Approach for the EFL Writing Classroom : Practices and Perspectives at a University in Indonesia. *The Journal of AsiaTEFL*. 18. 244-252. 10.18823/asiatefl.2021.18.1.15.244.
- Suparman, Lalu. (2017). The Effectiveness of Eclectic Method in Teaching Writing English of Recount Text for the Eight Grade Students of SMPN 1 Keruak. *PALAPA*. 5. 43-60. 10.36088/palapa.v5i1.35.
- Sturm, Afra. (2016). Observing writing processes of struggling adult writers with collaborative writing. *Journal of Writing Research*. 8. 301-344. 10.17239/jowr-2016.08.02.05.
- Teng, L. S & Zheng, L.J. (2020). Empowering learners in the second/foreign language classroom: Can self-regulated learning strategies -based writing instruction make a difference? <https://doi.org/10.1016/j.js;w.2019.100701>
- Yelay, B. (2017). Assessment of the qualities of academic writing in senior essay of English graduates: The case of Dire Dawa University. *International Journal of English and Literature*, 8(8), 102–114. <https://doi.org/10.5897/ijel2015.0777>
- Yu, S. (2020). Giving genre-based peer feedback in academic writing: Sources of knowledge & Skills, Difficulties & Challenges, 1-18. *Assessment & Evaluation Higher Education*. doi: 10.1080/02602938.2020.1742872
- van der Loo, J., Krahmer, E., & van Amelsvoort, M. (2018). Learning how to write an academic text: The effect of instructional method and writing preference on academic writing performance. *Journal of Writing Research*, 9(3), 233-258. <https://doi.org/10.17239/jowr-2018.09.03.01>
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