

**THE UTILIZATION OF COLLABORATIVE LEARNING TO IMPROVE  
STUDENTS' CRITICAL THINKING IN ACADEMIC WRITING**

**A Thesis**

**By:  
SONIA OCTAVIA**



**MASTER IN ENGLISH LANGUAGE TEACHING STUDY PROGRAM  
LANGUAGE AND ART EDUCATION DEPARTMENT  
TEACHER TRAINING AND EDUCATION FACULTY  
LAMPUNG UNIVERSITY  
BANDAR LAMPUNG  
2022**

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**A Thesis**

**Submitted in a Partial Fulfillment of  
The Requirements for S-2 Degree**

**in**

**Language and Arts Education Department  
Teacher Training and Education Faculty**



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## ABSTRACT

### THE UTILIZATION OF COLLABORATIVE LEARNING TO IMPROVE STUDENTS' CRITICAL THINKING IN ACADEMIC WRITING

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Collaborative Learning refers to the process which provides participants the opportunity to explore, discuss, cooperate, and develop learning capabilities especially writing. The students' writing achievement at the sixth semester of UIN Raden Intan Lampung is mostly still considered low (<70) and does not reach the college minimum score criteria. In relation to this issue, the present study attempts to 1) explore the effects of collaborative learning on students' critical thinking in academic writing, 2) to find out which critical thinking aspect is mostly improved through collaborative learning, and 3) to find out whether collaborative learning can improve the students' writing achievement. This research employs mix method (quantitative and qualitative research design) that involves 32 students of the sixth semester as the sample of the research chosen using probability samples, observation and document analysis were conducted to observe the students' collaborative learning activities. Meanwhile, in order to find out the effects of collaborative learning on students' writing achievement, there were two writing tests administered, namely pre-test and post-test.

The result showed that that 1) Students' critical thinking in collaborative learning activities mainly happened in group drafting and revising, and the critical thinking skills were Inference, Explanation, and Self-Regulation.; 2) In collaborative learning instructions, based on the students' perception on the frequency of critical thinking application results, the students mostly used their problem solving skills (Analysis), but seldom interpreted by making collaborative predictions based on possible options and actual evidence (Interpretation); 3) Collaborative learning can improve students' writing achievement. The mean of the students' academic writing scores after collaborative learning increased 11.56 from the pre-test 67.19 to the post-test 78.75. The result analysis of Paired sample t-test showed that t-value was higher than t-table  $10.227 > 2.042$  with the Sig. p value  $.000 < \alpha = .005$ . Therefore, this study might be the window for further studies to explore and to be focused on specific analysis of the effects of collaborative learning on each aspect of writing improvement.

**Key words:** *collaborative learning, critical thinking, academic writing.*

**Research Title : THE UTILIZATION OF COLLABORATIVE LEARNING TO IMPROVE STUDENTS' CRITICAL THINKING IN ACADEMIC WRITING**

**Student's Name : SONIA OCTAVIA**

**Student's Number : 20230442021**


**Study Program : Master in English Language Teaching**


**Faculty : Teacher Training and Education**

**APPROVED BY**  
Advisory Committee

Adviser

Co-Adviser

  
**Dr. Muhammad Sukirlan, M.A**  
NIP 19570406 198603 1 002

  
**Dr. Feni Munifatullah, M.Hum.**  
NIP 19740607 200003 2 001

The Chairperson of Department  
of Language and Arts Education

The Chairperson of Master  
in English Language Teaching

  
**Dr. Nurlaksana Eko R., M.Pd.**  
NIP 19640106 198803 1 001

  
**Prof. Dr. Flora, M.Pd.**  
NIP 19600713 198603 2 001

**ADMITTED BY**

**1. Examination Committee**

Chairperson : **Dr. Muhammad Sukirlan, M.A.**

Secretary : **Dr. Feni Munifatullah, M.Hum.**

Examiners : **1. Ujang Suparman, M.A., Ph.D.**

**2. Prof. Ag. Bambang Setiyadi, M.A., Ph.D.**

**2. Dean of Teacher Training and Education Faculty**

**Prof. Dr. Sunyono, M.Si.**

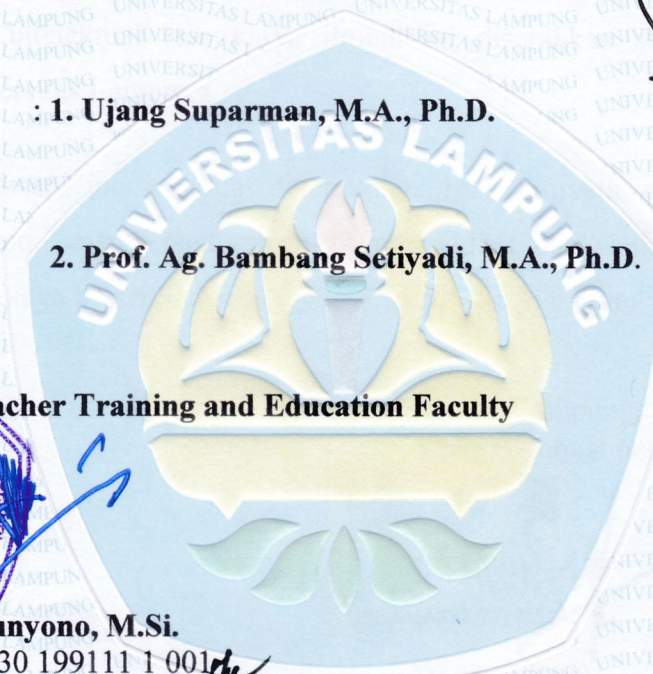
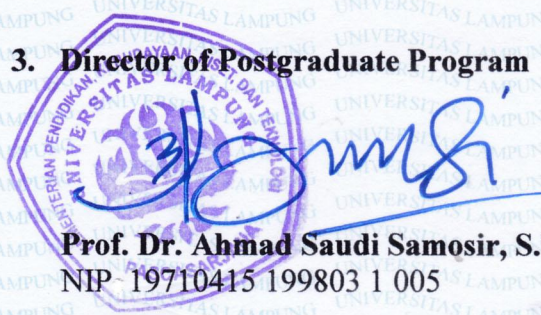
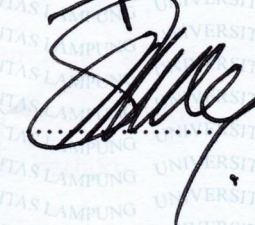
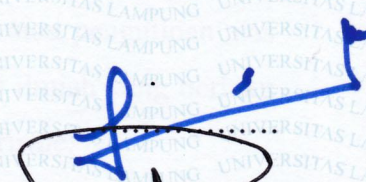

NIP 19651230 199111 1 001

**3. Director of Postgraduate Program**

**Prof. Dr. Ahmad Saudi Samosir, S.T., M.T.**

NIP 19710415 199803 1 005

**4. Graduated on : December 02<sup>nd</sup> , 2022**



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Bandar Lampung, 20 Januari 2023  
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Sonia Octavia  
NPM 2023042021

**SURAT KETERANGAN *PROOFREADING***

Yang bertanda tangan dibawah ini:

Nama : Panji Tanashur, M.A

Pekerjaan : Dosen Universitas Insan Cita Indonesia, Jakarta.

Menerangkan bahwa benar thesis dengan judul “The Utilization of Collaborative Learning to Improve Students’ Critical Thinking In Academic Writing” telah di *proofreading* oleh saya.

Demikian surat keterangan ini dibuat agar digunakan sebagai bukti yang sah.

Lombok, 09 Januari 2023

Hormat Saya,



Panji Tanashur, M.A

## **CURRICULUM VITAE**

Sonia Octavia was born in Tanjungkarang, on October 30<sup>th</sup> 1995. She is the third daughter of her mother Dr. Heni Noviarita, M.Si. She has two brothers, M.Hasyim Ashari and M.Hafizh. She also has one sister, Nur Indah Febriani.

She began her study at SD Negeri 1 Kedaton. After she graduated from elementary school in 2007, she continued her study at SMP Negeri 10 Bandar Lampung and graduated in 2010. Then, she continued her study at MAN 1 Bandar Lampung and graduated in 2013. Furthermore, in 2013, she successfully passed the UMPTKIN program and accepted as a student of the English Education Study program of State Islamic University of Raden Intan Lampung. She got bachelor degree in 2019. Then, she extended her study for her Master in English Education Study Program, University of Lampung in 2020.



## **DEDICATION**

The writer dedicates this work to:

1. Her Beloved Mother – Dr. Heni Noviarita, M.Si
2. Her Sister and Brothers – Nur indah Febriani, M. Hasyim Ashari, and M.Hafizh
3. Her Almamater – University of Lampung
4. Her Friends in Master of English Education Study Program
5. English Teachers

## **MOTTO**

*“You can change what you do, but you can’t change what you want”*

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Finally, the writer believes that her writing is still far from perfection. There might be weaknesses in this research. Thus, comments, critics, and suggestions are always open for better research. Somehow, the writer hopes this research would give a positive contribution to educational development, readers and to those who want to conduct further research.

Bandar Lampung, 30 October 2022

The Writer

Sonia Octavia

2023042021

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## I. INTRODUCTION

The introductory chapter has several points describing why the research should be conducted and how important it is. Particularly, the chapter is divided into sub-points, for example, background of the problems, identification of the problems, limitation of the problem, research questions, objectives, uses, scope, and definition of terms.

### 1.1. Background of the Problems

Academic writing is one of the steps of the academic research process where researchers report situations of thinking, experience, observation, application, or testing as a solution to a scientific problem identified. Searching for, finding, and evaluating information through mental processes and interpretation and reconstruction is one of the most crucial characteristics of academic writing (Akkaya and Aydin, 2018: 129). Academic writing has various types such as articles, papers, projects, and posters. The types usually involve reporting a research process as a composition. The process strains students' basic ability to access relevant references, critically evaluate them, and put different ideas and opinions together to develop their personal idea (Al Fadda, 2012: 124).

Academic writing and critical thinking are closely linked in which critical thinking in academic writing indicates that students have mastered cognitive skills required for university work (Weigle in Trang and Anh, 2020: 787). As in a study conducted by Trang and Anh (2020: 785) on EFL university learners, they investigate the impact of critical thinking tasks (CTTs) implementing six treatment sections based on the six levels of Bloom's taxonomy on EFL learners' paragraph writing performance and examine their attitudes. The learners are 42 non-English majors divided into two groups, 21 learners are in an experimental group and the other 21 are in a control group. The tasks include the appropriate levels of thinking such as remembering, understanding, applying, analyzing, evaluating, and creating (Trang and Anh, 2020: 788). The result reveals that critical thinking tasks

empower EFL learners in their paragraph writing. Most of the EFL learners also have a positive attitude toward the use of critical thinking tasks supporting their paragraph writing, based on the result obtained from the questionnaire. At the university level, paragraph writing is a step to academic writing which serves as a tool in order to contribute to the society and academic field. Thus, a positive attitude and an improvement of students' paragraph writing quality by shaping the way they think critically before producing better academic writing is strongly needed.

On the other hand, in a language learning context, critical thinking is described as reasonable and reflective thinking focusing on deciding what is done (Ennis in DeWaelche, 2015: 135). It is believed as the key to successfully expressing individuality in academic writing. It is an ability to think clearly and rationally in assessing claims and arguments in writing that is crucial for students to convince the reader, whether the claims are supported with valid-relevant pieces of evidence and logical justifications (Wray and Wallace in Baskoro, 2016: 2).

However, critical thinking does not occur by chance, but it happens by the structured explanation, intentionally and repeatedly done by the students who can collaborate to develop their in-depth thinking (Changwong et al., 2018: 40-41). It is also not surprising to note that university students still struggle to think critically and develop their in-depth thinking in composing scientific writing (Azizah and Budiman, 2018: 176-177; Cennetkuşu, 2017: 310; Sağlameland Kayaoğlu; 2015: 38-39).

The researcher had done preliminary research at the sixth semester of UIN Raden Intan Lampung in order to know the students' writing ability especially argumentative essay. Based on the observation and interview, it was found that students' are still lack of capability in mastering English especially their writing. The students' ability in writing was still low because they did many errors in grammar when they produce new sentence especially in academic writing. They find difficulties to create and develop the paragraph, and then express their ideas into the written form.

In addition, the researcher also got information about the students' writing ability by doing interview with some students of the sixth semester. They said that they got difficulties in developing and expressing their ideas, the students hard to think critically in-depth related to the topic and write with grammatical correctly, also lack of the appropriated vocabulary that makes the students hard to find the right word to express the meaning. In addition because of the individual work activities, they got difficulties in elaborating the ideas in writing activities so that students still confused in making paragraph especially argumentative essay text.

Based on the interview above the researcher found that the causes of students' academic writing is still low are: the students got difficulties of choosing appropriated vocabulary to express meaning; the students hard to think critically in-depth related to the topic and write with grammatical correctly; the students still confused in creating, develop, and share their ideas in written form.

Furthermore, based on the scores data of tertiary students of UIN Raden Intan Lampung in the previous semester, odd semester of the academic year 2021-2022, their writing achievement is mostly still considered low (<70) and does not reach the college minimum score criteria, 70-75 for B, 76-80 for B+ and  $\geq 81$  for A. Although the score does not specifically show their critical thinking problems, it shows that they need a writing teaching technique to improve the achievement as well as the detailed critical thinking analysis.

In accordance with the problems, collaborative learning offers a solution. Collaborative refers to the process which provides participants the opportunity to explore, discuss, cooperate, and develop learning capabilities (Dobao and Heidar in Talib and Cheung, 2017: 44). Vygotsky in Chiona (2020: 2) argued that social interaction precedes development while consciousness and cognition are the end products of socialization and social behavior. The foundation of collaborative learning is built on this Vygotskian notion of having to cooperate with others by contributing ideas for quality

learning and growth to take place. Collaborative learning has helped to foster language learning and writing conventions development (Silby and Watts, 2015: 801 and Wette, 2014: 62). Through collaborative learning, students are impelled to make decisions about the language needed to express their ideas, and thus, formulate the structure in which to express those ideas as they produce a text together (Wang in Talib and Chung, 2017: 44).

Some studies are also conducted to measure the effect and development of collaborative learning and computer-supported collaborative learning on participants' performance (Dobao in Talib and Cheung, 2017: 44). The feedback received from students is generally positive with most students feeling affirmative about collaborative writing tasks. Therefore, the research studies suggest that the design of the collaborative writing task is important to provide the maximum learning opportunity for the participant.

Additionally, students who work in collaborative groups also report being more satisfied with their classes and with their performance (Lin and Maarof in Alawaji, 2020: 701). The products of collaborative learning have demonstrated the recommended quality of work making this another factor as to why students are more motivated after collaborative writing tasks. While working in groups, students generally produce shorter but better texts in terms of task fulfilment, grammatical accuracy, and complexity (Shehadeh, 2011: 288 and Yeh, 2014: 23-24), as collaboration allows students to gather ideas and provide each other with feedback.

Although there are many advantages to collaborative learning, several studies have proven that Asian students are lacking critical thinking abilities such as in terms of comparing, evaluating, arguing, and presenting the point of view in their writing (Shaheen, 2012: 56, 2016: 3 and Fell and Lukianova, 2015: 2-3). Other scholars also report that students are coming from a non-English speaking background with the limited practice of English both spoken and in writing (Yeoh and Terry, 2013: 276; Strauss in Puspitasari et al., 2020: 196; Samanhudi and Linse, 2019: 108).

Different studies have proposed different ways of teaching academic writing. While literature suggests that students are capable of performing at

higher intellectual levels when asked to work in collaborative situations, still, there is little examination of how collaborative learning improves students' critical thinking and eventually improves their academic writing achievement. Also, little has been known regarding what critical thinking aspect collaborative learning affect. Therefore, the research attempts to explore the effects of collaborative learning on students' critical thinking in academic writing.

## **1.2. Identification of the Problems**

In accordance with the background of the problems, the identification of problems is as follows:

- 1) The students still struggle to think critically and develop their in-depth thinking in composing scientific writing.
- 2) The students' writing achievement is mostly still considered low (<70) and does not reach the college minimum score criteria.
- 3) The students got difficulties of choosing appropriated vocabulary to express meaning
- 4) The students still confused in creating, develop, and share their ideas in written form.

## **1.3. Limitation of the Problem**

Based on the identification of the problems, the limitation of the problem is formulated. Considering several problems identified in academic writing, it is assumed that there should be development in learning activities. Moreover, although previous studies on collaborative learning have proved that it is beneficial to the students' writing skill, it has not explored students' critical thinking aspect yet in teaching academic writing. Therefore, the effects of collaborative learning on students' critical thinking in academic writing are explored.

## **1.4. Research Questions**

According to the limitation of problems, the formulation of research questions is as follows:

- 1) How does collaborative learning improve the students' critical thinking in academic writing?
- 2) Which critical thinking aspect is mostly improved through collaborative learning?
- 3) Can collaborative learning improve the students' academic writing achievement?

### **1.5. Objectives**

From the research questions, the objectives are:

- 1) To explore the students' collaborative learning to improve the students' critical thinking in academic writing.
- 2) To find out which critical thinking aspect is mostly improved through collaborative learning.
- 3) To find out whether collaborative learning can improve the students' writing achievement.

### **1.6. Uses**

This research aims at having the following uses:

- 1) Theoretically, it can be used as a reference for the next researcher who wants to concentrate on collaborative learning to improve the students' critical thinking and improve their writing achievement.
- 2) Practically, it informs readers, English teachers, language researchers, other practitioners, about the effects of collaborative learning on the students' critical thinking and writing achievement.

### **1.7. Scope**

The research is limited to collaborative learning and critical thinking in academic writing. An academic writing test, an observation, and a set of critical thinking questionnaires were administered in the study. The population of the research was the sixth semester of 32 undergraduate students majoring in the English Education study program at UIN Raden Intan Lampung. The students in academic writing class were classified into two classes. The students divided into eight groups of four students as the sample of the population chosen using probability samples in which cluster sampling

seems to be appropriate because the students were selected from a group of academic writing classes rather than an individual. The reason for choosing the third year of college students as the research subject is to improve their critical thinking through collaborative learning considering their current position that will write a research thesis.

### **1.8. Definition of Terms**

To prevent a misunderstanding from the reader, the terms used in the study are described as follows:

- Academic writing, especially essay writing, trains students' basic ability to access relevant references, critically evaluate them, and put different ideas and opinions together to develop their personal idea (Al Fadda, 2012: 124-125).
- Critical thinking involves the ability to reflect on an idea or problem, apply reason, and make logical connections between ideas. There are elements that experts agree are essential for critical thinking, such as being able to think independently, clearly, and rationally (Hitchcock, 2018: 6-7).
- Collaborative learning involves peer-to-peer learning that fosters deeper thinking in the classroom. Its theory suggests that group learning helps students develop their higher-level thinking, oral communication, self-management, and leadership skills (Chandra, 2015: 1).

## II. LITERATURE REVIEW

The literature review reviews several relevant theories and previous studies to give a similar understanding. It also discusses concepts of academic writing, aspects of academic writing, teaching academic writing, critical thinking in academic writing, collaborative learning, collaborative learning to improve critical thinking, procedures of teaching academic writing through collaborative learning, advantages and disadvantages of collaborative learning, theoretical assumption, and hypotheses.

### 2.1. Academic Writing

Academic writing is defined as a means of producing, coding, transmitting, evaluating, and renovating teaching and learning knowledge and ideology in academic disciplines (Fang, 2021: 1). Academic writing characteristics include a formal tone, usually use of the third-person rather than first-person perspective, a clear focus on the research problem under investigation, and precise word choice. Writing ability in an academic style is essential to disciplinary learning and critical for academic success. Control over academic writing gives you capital, power, and agency in knowledge building, identifying formation, disciplinary practices, social positioning, and career advancement.

Academic writing has various types including theses, articles, and papers. The types usually involve reporting a research process as a composition. According to Indeed Editorial Team (2021: 3-5), there are seven categories of academic writing:

- 1) Chapter. It can be submitted by scholarly writers for an edited volume or collection which features submissions from different authors. The edited publications can offer different viewpoints on a single topic or idea. The chapters follow other styles of academic writing but may provide less background because readers are likely to have some knowledge of the subject already. Chapter writers often have already published scholarly



documents on the topic, and they may submit shorter versions or similar pieces of writing for the collection.

- 2) Essay. It is a short piece of writing, usually between 1,500 to 2,000 words, that presents an idea or argument. Typically, an essay aims to convince the reader of an idea using research and analysis. The writer provides context on the subject to help support their argument. Academic writers commonly publish their essays in scholarly journals.
- 3) Research article. It provides an in-depth analysis of the author's independent research. It clearly explains the researcher's processes and methods to show how to conclude. It usually references other data and resources to reinforce the findings of the research. Writers commonly submit the articles to academic journals or similar publications. Many times peers in the industry review the articles before their publication.
- 4) Technical report. It explains the progress or results of technical or scientific research. Researchers usually write the reports to submit to the sponsor or organization funding the research project. It may include recommendations based on the results of the research. The documents rarely go through a peer-review process. Therefore, researchers often use the reports as a primary draft that they can later refine before submitting their work to scholarly publications.
- 5) Annotated bibliography. It is a comprehensive list of sources on a topic that includes brief descriptions or evaluations of each source. It summarizes the sources, usually in a paragraph format, so that a reader can understand the general context of each one. For example, the writer may include the source's principal argument, conclusion, and reliability. Bibliographies are independent documents that can give the reader an overview of the research and findings on a specific topic.
- 6) Thesis. It is sometimes known as a dissertation, a document that summarizes the author's research on a specific topic. Typically, those pursuing an advanced degree, such as a master's degree or doctorate, submit a thesis at the end of their program as a requirement for graduation. It usually builds on existing research to contribute new knowledge or

theories on the topic. They are typically lengthy documents between 6,000 and 20,000 words. Writers usually choose to structure a thesis using chapters to break up their key points.

- 7) Literary analysis. It evaluates a literary work such as a book or a collection of poetry. Authors of a literary analysis persuasively communicate their interpretation of an idea or concept in the literature. The analysis often provides enough background and context of the work to support the author's argument. It usually focuses on one specific part of the literary work, such as a character or theme.

One of the seven categories of academic writing is essay. In relation to promoting the students' critical thinking, the best way to investigate it is through their argumentative essay. There are five elements of argumentative essay, which are: explanation of the issue; a clear thesis statement, a summary of the opposing arguments, rebuttal to the opposing arguments; and writer own arguments (Oshima and Hogue in Suhartoyo, 2019: 34).

In argumentative essay, the students have to think critically towards the topic and write logical reasons about the arguments they write. Then, the reasons should be supported by several evidences in order to strengthen their ideas. At the end, the conclusion should be written according to the arguments presented in the paragraphs before. Indeed, each part of argumentative elements should be connected. Generally, in writing, including, argumentative writing, there are three important parts: introduction, body, and conclusion. The introduction in argumentative writing covers the thesis statement or claim in which the writer opts to choose his other stand point toward the topic being argued, whether s/he agrees or disagrees, while the body of argumentative writing covers supports to maintain the argument of the writer and warrants to show how the evidences logically connected to the data. The writer can also put backing and rebuttal inside the body of an argumentative essay. Finally, the last part of the argumentative essay is called conclusion, in which the writer puts his/her summation of points or final evocative thought to ensure the readers remember the argument.

Based on the description above, it is concluded that academic writing has a wide range of types, regarded as a discipline itself. The discipline contains different parts ranging from title writing to bibliography and attributes related to their writing that include language, expression, and form. With its systematization, the most common type of academic writing is academic articles because scientists publish their research reports by writing various articles throughout their academic careers (Deniz and Karagöl in Akkaya, A. & Aydin, G., 2018: 129-130). To prepare the students for the publication and to have better critical thinking for academic article writing, the research aims to improve students' critical thinking through argumentative essay writing.

## **2.2. Aspects of Academic Writing**

English academic writing has a distinctive formal style and uses particular language norms that need to be taken into account. There are a lot of common features of academic and scholarly writing as quoted by Indeed Editorial Team (2021: 2-3) such as:

- 1) Formal tone and style. Formal writing requires considerable effort to construct meaningful sentences, paragraphs, and arguments that make the text easy to comprehend. It also has a serious tone to give credibility to the ideas the writer is presenting. Meanwhile, academic texts should be factual, concise, and accurate. The author has to choose words precisely and carefully so the reader can accurately understand the concepts within the text.
- 2) Objective argument and higher-order thinking skills. Academic writing aims to make an objective argument using evidence. Writers back up their statements and key points using facts and evidence-based research. They use data and analysis to present an argument objectively without stating their own beliefs or assumptions. Higher-order thinking skills include cognitive processes that are used to comprehend, solve problems, and express concepts or abstract ideas that cannot be easily acted out, pointed to, or shown with images.

- 3) Use of resources. Writers use academic writing to show their knowledge of the subject. They support the conclusions with evidence and cite the resources including a bibliography with their work. A bibliography lists all the scholarly articles, books, or other resources a writer references throughout the text. It is important to cite sources in academic writing because it gives credit to others for their research and helps support the major points of your text.
- 4) Logical structure. Academic writing's clear and logical structure can help readers follow the text and make connections between related concepts. It has an introduction and a conclusion along with a well-defined thesis statement. A thesis statement is a summary typically in the introductory paragraph that defines the key point or argument of the text. The body of the text supports the thesis statement and the conclusion summarizes the idea and explains its significance.
- 5) Free of errors. It is important for academic writing to be clean, consistent, and free of errors so the readers view the text as a credible source. Academic writing uses specific language to convey key points. It also follows grammatical rules and remains consistent with stylistic conventions, such as spelling, punctuation, and verb tense.

In short, excellent academic writing includes a formal tone and style, objective argument, resources, logical structure, and free of errors

### **2.3. Teaching Academic Writing**

Generally, teaching is not only transferring knowledge to the students, yet it is guiding and facilitating the students to succeed, enabling them to learn getting conditions for learning.

Coffin in Hidayati (2017: 196) argued that at the university level, disciplinary knowledge and understanding are largely exhibited and valued through the medium of writing. Figure 1 shows the process approach in different stages which can be combined with other aspects of teaching writing (Coffin in Hidayati, 2017: 202).

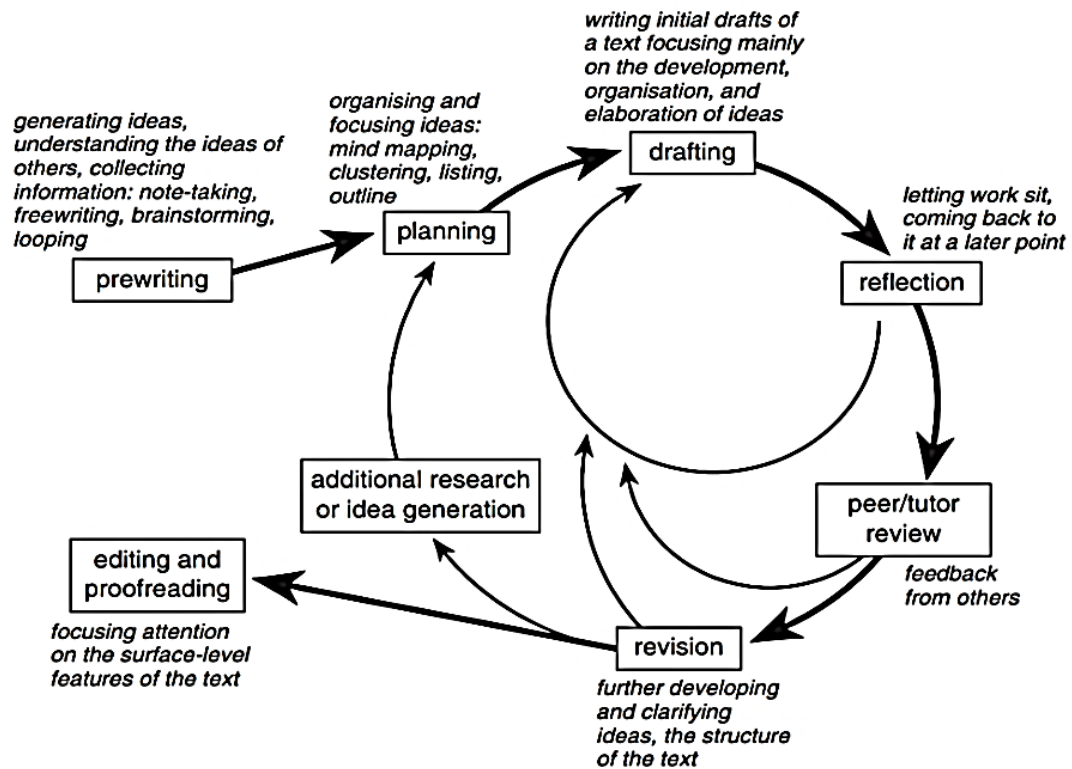


Figure 1. The writing stages

- 1) Pre-writing. It consists of gathering research, organizing the material, and understanding and brainstorming the ideas. The purpose of pre-writing is to generate an abundance of raw ideas and notes that give the writer some strategies for writing the first draft. It also enables the writer to explore a topic from different perspectives, engage the writer's imagination and creativity, discover original ideas, and perceive not-so-obvious relationships between and among ideas. For most students, starting a draft without the result of the pre-writing phase leads to poorly constructed writing that often contains weak generalities.
- 2) Planning. It refers to the use of a deliberate and organized approach to tackle a writing task and include a writer's first thoughts or basic ideas about the topic. Students who struggle with writing generally do not plan. They would rather compose their text as they write. During the planning process, students should ask themselves who their readers are and what the essay's purpose is. Planning helps students to form more complete thoughts and to produce more cohesive writings.

- 3) Drafting. It is the stage of the writing process, where the authors turn the outlined ideas into the first draft of their writings. The outlined ideas are formed during the pre-writing stage which is the first step in a standard writing process, and it involves generating ideas, general organizing, and outlining. There are two types of the draft. Firstly, it is a rough draft, the first segment of the drafting process where the author places information on the page. A rough draft may undergo editing by the writer, but it is not the polished version of the assignment. Secondly, it is a final draft. The draft has been edited numerous times by the author and may undergo the benefit of a peer review. The draft is considered a perfect copy of the assignment where all errors have been corrected and the writing has undergone numerous phases of revision.
- 4) Reflection. It is a balancing act with many factors at play such as description, analysis, interpretation, evaluation, and future application. Reflective writers must weave their perspectives with evidence of deep and critical thought as they make connections between theory, practice, and learning.
- 5) Peer or tutor review. It refers to the many ways in which students can share their creative work with peers for constructive feedback and then use the feedback to revise and improve their work. The purpose of peer review as a prelude to revision is to help the writer determine which parts of the paper are effective and which ones are unclear, incomplete, or unconvincing. Peer review is often most helpful to students when it is utilized between the drafting and revision stages, or after each student has produced a complete draft, but there is still time to make substantial changes.
- 6) Revision. It is a process in the writing of rearranging, adding, or removing paragraphs, sentences, or words. Writers may revise their writing after a draft is complete or during the composition process. Revision involves many strategies known generally as editing, but it can also entail larger conceptual shifts of purpose and audience as well as the content. Revision may involve the identification of a thesis, a reconsideration of structure or

organization, working at uncovering weaknesses, or clarifying unclear positions. Many writers go through multiple rounds of revisions before they reach a final draft.

- 7) Editing and proofreading. They are the last stages of editing in the writing process while publishing the paper is the overall end. Mistakes that may need to be corrected in the stage include grammatical and punctuation errors. Proofreading is simply the final stage of the editing process when the paper is evaluated for mechanical correctness, such as grammar, punctuation, spelling, omitted words, repeated words, spacing and format, and typographical errors to improve style and clarity.

In short, teaching academic writing goes through seven different stages namely pre-writing, planning, drafting, reflection, peer review, revision, and editing and proofreading.

## **2.4. Critical Thinking in Academic Writing**

Writing and thinking are interconnected. It is due to good writing involving proper planning. The planning involves reading for obtaining information. The reading stage uses critical thinking (CT) skills to decide on what should be written to present well-organized academic writing. The writer knows that the first completed writing is not the final stage. To revise the writing draft, it is necessary to have critical thinking on writing to improve on the final write-up.

In university contexts, critical thinking is defined in terms of abilities or skills such as selection, evaluation, analysis, reflection, questioning, inference, and judgment (Tapper in Tahira and Haider, 2019: 3). It is exhibited through the students' abilities to identify issues and assumptions, recognize important relationships, make correct inferences, evaluate evidence or authority, and deduce conclusions (Tsui in Tiruneh et. al., 2013: 1). Therefore, university students are expected to have the critical thinking ability to analyze and synthesize complex information from various sources.

### **2.4.1. Critical Thinking Concept**

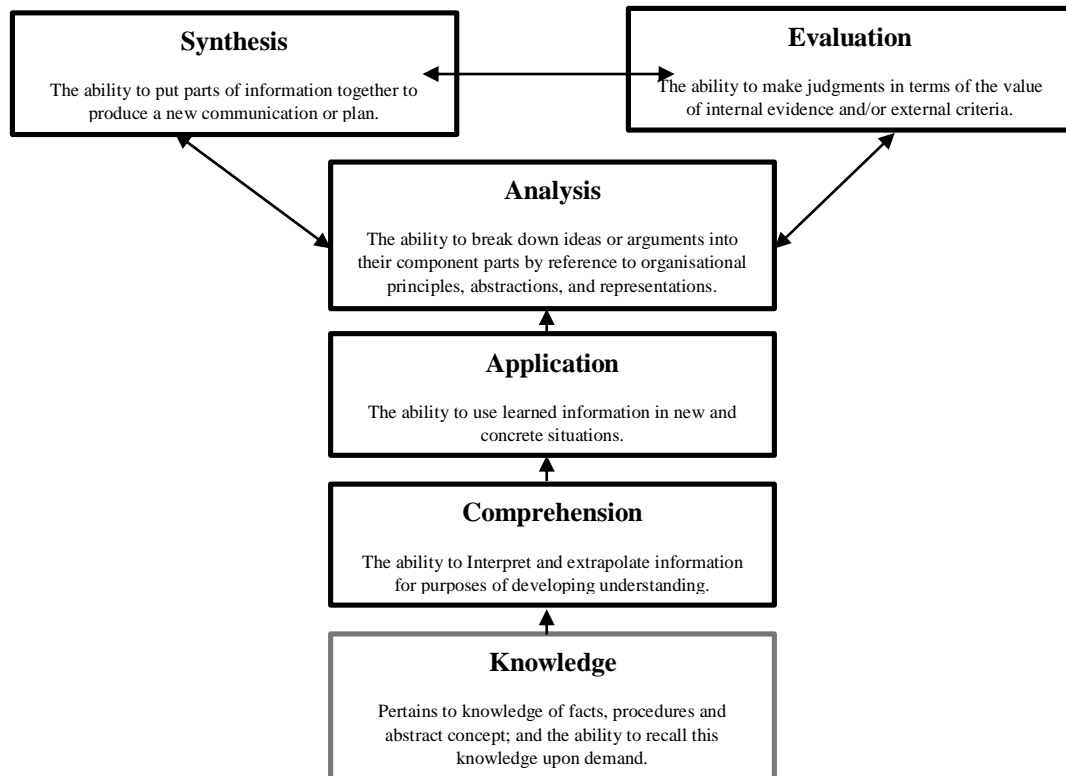
The idea of critical thinking, stripped to its essentials, can be expressed in several ways. Stanovich in Hitchcock (2018) propose to

ground the concept of critical thinking in the concept of rationality, which they understand as combining epistemic rationality (fitting one's beliefs to the world) and instrumental rationality (optimizing goal fulfillment). A critical thinker, in their view, is someone with a propensity to override suboptimal responses from the autonomous mind. Critical thinking refers to a metacognitive process that, through purposeful, reflective judgment, increases the chances of producing a logical conclusion to an argument or solution to a problem. Instruction in critical thinking is becoming exceedingly important because it allows individuals to gain a more complex understanding of the information they encounter and improves good decision-making and problem-solving in real-world applications (Butler et al., 2012: 45).

Frameworks for thinking processes may be developed for several specific reasons, for example, to address educational objectives, instructional design, productive thinking, or cognitive development. In this context, several frameworks are considered because the processes they describe as being necessary for educational settings are also necessary for the successful application of critical thinking. Bloom's taxonomy (1956: 7) of educational objectives was developed to classify mental acts or thinking resulting from educational experiences and was one of the first frameworks to characterize thinking as an array of both lower-order and higher-order thinking processes consistent with many modern conceptualizations of critical thinking (Dweyer et al., 2014: 44).

Bloom's taxonomy of educational objectives consists of six hierarchically arranged categories of thought (see Figure 3) which are notably consistent in preparing annual comprehensive examinations and to bring about some standardization of learning objectives in academia (Krathwohl, 2002: 212).





The knowledge stage is the activity where students can define, memorize, and remember previously learned materials such as common terms and basic concepts. At the comprehension stage, the students require the ability to grasp the conceptual meaning and able to discuss, compare, contrast, explain a subject matter. On the other hand, at the application stage, students are supposed to apply a theory in a practical context or recognize and then use the correct methods to solve problems. The first three categories are considered to be hierarchical. Basic knowledge and secondary comprehension expand on basic knowledge and requires no critical thinking, but the application requires higher-order thinking about the knowledge that a student constructs.

At the level of analysis, students can explain why a particular solution process works to resolve a problem. Students are expected to be able to see patterns underlying content or deconstruct the critical components of a framework. Then, they can rearrange, reconstruct, or combine parts of a process to form and utilize a new whole, at the level of synthesis.

The last stage is evaluation. In this stage, students are expected to create, judge, and conclude a variety of ways to solve problems or create products of their thoughts. The last three categories are also considered higher-order skills

that require critical thinking, but they are not necessarily hierarchical. It should be noted that correctly using the higher-order skills requires both knowledge and comprehension of the content so all levels of thinking should be encouraged.

#### **2.4.2. Critical Thinking Core Aspects**

Critical thinking, a key component of higher-order thinking, is defined as both a set of cognitive abilities and thinking dispositions. Critical thinking abilities refer to skills of interpretation, analysis, inference, evaluation, explanation, and self-regulation, and a person with critical thinking dispositions would be apt to use the skills (Facione, 2015: 5). The construct of critical thinking has been widely embraced as a core cognitive skill that should be nurtured and emphasized throughout educational curricula at every grade level. There are six cores of critical thinking skills involved in critical thinking processes according to Facione (2015: 5) described as follows:

- 1) Interpretation. It includes sub-skills of categorization, decoding significance, and clarifying meaning, for example, recognizing a problem and describing it without bias.
- 2) Analysis. It includes examining ideas, detecting arguments, and analyzing arguments as sub-skills of analysis, for example, identifying the similarities and differences between two approaches to the solution of a given problem.
- 3) Evaluation. It is to evaluate the credibility of claims etc and to assess their logical strengths and weaknesses.
- 4) Inference. It identifies elements needed to draw reasonable conclusions, to form conjectures or hypotheses, to consider relevant information, and then to deduce the consequences from the selected relevant information, data, or facts.
- 5) Explanation. It states the results of the reasoning and to justifies them in terms of the evidential, conceptual, methodological, and contextual considerations or bases upon which the results are based. The sub-skills under explanation are stating results, justifying procedures, and presenting arguments.

- 6) Self-regulation. It means self-consciousness to monitor cognitive or thinking activities, the elements used and the results deduced. The two sub-skills under self-regulation are self-examination and self-correction.

In short, critical thinking has six cores namely interpretation, analysis, evaluation, inference, explanation, and self-regulation.

#### **2.4.3. Measuring Students' Critical Thinking in Academic Writing**

Critical thinking development is often stated as a primary goal in syllabi for students at various levels worldwide. Numerous endeavors have been made towards the cultivation of students' critical thinking in classroom teaching. The possibility of improving students' writing and critical thinking competence in one writing course attracts the attention of an increasing number of researchers in the second language (L2) writing. Despite the language can be an indicator of critical thinking (Palmer in Stapleton and Liu, 2018: 2), few studies have focused on the potential of using assessment for enhancing critical thinking.

Moreover, although there have been several popular general-content-based critical thinking assessment instruments, a subject-specific critical thinking assessment is both necessary and indispensable for informing the teaching of critical thinking in a writing context. Among the limited empirical studies on teaching critical thinking in writing, however, few researchers have conducted specific assessments to examine students' improvement in critical thinking, mainly due to a lack of appropriate assessment tools. Only a small number of the researchers have provided statistical evidence to show students' critical thinking improvement although the assessment is conducted by using a writing rubric with the inclusion of certain critical thinking elements.

For example, a rubric combining the requirements for writing (essay question, essay components, description, outside sources, postscript, grammar and punctuation, and formatting) and critical thinking (recognition of assumptions, inference/application, and interpretation and evaluation of arguments) is used (Çavdar and Doe, 2012: 303). Similarly, Franklin et. al. (2014: 4) rubric is also a combination of critical thinking

and writing standards. Simply mixing the evaluation criteria for writing and critical thinking in one assessment instrument seems not to be a good solution to a valid assessment of critical thinking, since thinking critically requires command of fundamental intellectual standards that are routinely used in assessing reasoning, clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness.

In addition, without comparing students' pre-test and post-test scores, some researchers use qualitative data to report the result of students' critical thinking improvement by comparing students' essay drafts (e.g., Moghaddam and Malekzadeh in Nejmaoui, 2019: 101), or by analyzing students' replies to survey questions (Zeng in Nejmaoui, 2019: 101). Neither way can present a valid assessment result of students' improvement in critical thinking which makes it hard to examine the effectiveness of their instructional strategies.

To measure the students' critical thinking in academic writing, the critical thinking questionnaire is administered to fulfill the quantitative data from the respondents. The standardized questionnaire is from the Foundation for Critical in Umali-Hernandez, A. M., et. al. (2017: 250).

## **2.5. Collaborative Learning**

The collaborative learning approach is part of social constructivist epistemology (Roselli, 2016: 256) or using the words of (Butera, et. al., 2020: 3-4), social psychology of knowledge. Collaborative learning is consistent with Vygotsky's principle that people develop cognitive abilities first in a social context supported or mediated by peers, mentors, or cognitive aids like representational artifacts, and only later can exercise these cognitive abilities as individuals. To conclude, knowledge is defined as a process of negotiation or joint construction of meanings, and this applies to the whole process of teaching. Although the main idea of the concept is the recognition of the value of cognitive peer interaction, collaborative learning also involves teachers and, in general, the whole context of teaching. In this sense, it is not about the circumstantial

application of group techniques, but the promotion of exchange and participation of each member to build a shared cognition.

Collaborative learning is an umbrella term for a variety of educational approaches involving a joint intellectual effort by students, or students and teachers together to working in groups of two or more, mutually searching for understanding, solutions, or meanings, or creating a product. Collaborative learning activities vary widely, but most center on students' exploration or application of the course material. Collaborative learning facilitates reflection, diversifies understanding, and stimulates skills of critical and higher-order thinking (Saqr and Tedre, 2018: 1).

Both in theory and practice, the most concentrated effort in undergraduate collaborative learning has focused on the teaching of writing. Collaborative writing has helped to foster language learning and writing conventions development (Silby and Watts, 2015: 801 and Wette, 2014: 62). Through collaborative writing, students are impelled to make decisions about the language needed to express their ideas, and thus formulate the structure in which to express those ideas as they produce a text together. Johnson and Johnson (2006) discuss what they see as being five essential components for successful collaborative learning that teachers with real expertise in the use of collaborative learning include in their instructional activities (Veenman, et al., 2002: 89) namely:

- 1) Positive interdependence. It is defined as all group members are working together towards a single goal. As the students learn that they each have various ideas to share that can enhance each other's knowledge and learning, they soon realize that they cannot truly succeed unless all members of the group succeed, and so they start acting more like a team. This is happened when the students are in the group task to have the team's objectives and make the decision together. In the drafting process, they should be worked together as it differs from cooperative learning in which a group separates the responsibility and does an individual work after receiving a split task.

- 2) Individual accountability. It goes a long way to preventing the silent student from occurring within groups. The silent student is an uninvolved student who is not contributing to the learning of others or him- or herself (Johnson and Johnson, 1999: 71). Individual accountability can combat the silent student as it involves assessing each student's contribution within the group (not just in terms of actual academic contribution, but in terms of the skills and interactions) and then reporting back to both the individual and the group (Johnson and Johnson, 1999: 68). This component will be achieved by students in the material collecting process. A collection plan is a crucial key to developing a sound study where the authors access and gather information from abundant sources.
- 3) Face-to-face promotive interaction. Meaningful face-to-face interaction requires a group to be small in size between two and four members (Veenman, et al., 2002: 89). Promotive interaction occurs when group members encourage and facilitate each other's efforts to achieve the group's goals (Johnson and Johnson, 2006: 17). Johnson and Johnson (2003: 5) suggested characteristics of promotive interaction include providing each other with help and assistance, exchanging needed resources, challenging one another's conclusions and reasoning, acting in trusting and trustworthy ways, and feeling less anxiety and stress. This component will appear in group revising, when students are collaboratively work to communicate and discuss how meaning is sharpened, and creatively engaging with sentence structure.
- 4) Social skills. The skills involved in collaborative exercises are very important to the effectiveness of the whole group's effort. Less socially skilled students find it more difficult to explain their ideas to the rest even if they fully understand the concepts. However, individuals placed in a group might not necessarily know each other, in which case they must get to know and trust each other so that they can communicate accurately with each other, support one another, and resolve conflicts constructively (Johnson and Johnson, 2006: 17). This component can be

appeared when students are making the ideas, creating and outline, and having the communicative strategy in each step of collaborative learning. Without social skills, promotive (face-to-face) interaction cannot occur.

- 5) Group processing. It involves periodic reflection on the group's progress, both in terms of how well the group and individuals within are functioning, and how the group plans to improve their work processes (Johnson and Johnson, 2006: 24). Group processing should include deciding what member actions were helpful or unhelpful, and then deciding what actions to continue or change. The steps of collecting process, group drafting and revising could stimulate this component appear in each process. This should lead to an increase in efficiency and effectiveness of the group by highlighting shortcomings, both overall and related to particular group members. It reminds each group member of their importance and individual accountability within the group, and could therefore lead to a reduction in group members leaving others to do all the work.

In short, collaborative learning improves the exchange and participation of each group member to create a shared cognition and provides reflection, diversifies understanding, and stimulates skills of critical and higher-order thinking.

## **2.6. Collaborative Learning to Improve Critical Thinking**

Several ways are used to increase the students' ability to think critically in composing well-developed academic writing, one of which is using collaborative learning. Some prior researchers have investigated the use of collaborative learning to improve the students' skills as follows.

A Classroom Action Research (CAR) has been conducted by Baskoro (2015: 77-78) to find out whether university students' critical thinking ability in critical reading and writing improved after being taught using collaborative learning. Observation, writing tests, and questionnaire are employed in data gathering while qualitative data analysis in form of narrative discourse and descriptive statistics are used in the study. The result

reveals that the implementation of the collaborative learning method allows students to improve students' critical thinking in critical reading and writing classes which are indicated by students' general attitudes of critical thinking, suspended judgments, high participation, and the significant change percentages of students' score on argumentative essay.

Another study is conducted by Jeong (2016: 1). The purpose of the study is to explore English Foreign Language college students' perceptions and experiences about technology-enhanced collaborative writing courses. The study integrates the cloud-based online collaborative writing tool and the peer-editing activities to develop college students' English academic writing skills and motivation. To find out students' perceptions and attitudes about technology-enhanced English writing instruction and online-based peer editing activities, the cloud-based online survey is administered at the end of the course. For more in-depth analysis, students' essay samples and results from semi-structured focus group interviews are utilized. In the study, using Google Docs, students can create online documents and edit them online while they are collaborating with other students and the instructor in real-time. The study indicates that students in the course demonstrate affirmative perceptions about the use of the cloud-based online writing tool and having a collaborative peer-editing experience.

The last study had done by Sahoo and Mohammed (2018). The research aims to analyze the effect of academic writing and journal critiquing as educational approaches in improving critical thinking and collaborative learning among undergraduate medical students. A mixed-method study is designed to explore the possible role of collaborative research proposal writing in enhancing critical thinking and collaborative learning. The students work in small groups and develop research protocols through an evidence-based approach. It is followed by writing reflective summaries in academic portfolios about the activity undertaken. All participants agree that the model help in applying concepts to new situations in the form of designing their study which reflects in enhanced higher-order cognitive skills. The study shows that the introduction of a structured



module in the core medical curriculum that focuses on research writing skills embedded with collaborative and reflective practices can enhance collaborative learning, critical thinking, and reasoning among medical students.

In brief, some studies above have proven that collaborative learning is effective to improve students' critical thinking skills and various learning skills such as reading and writing. Therefore, collaborative learning is applied in teaching writing to improve students' critical thinking more specifically.

## **2.7. Procedures of Teaching Academic Writing through Collaborative**

### **Learning**

In the 21<sup>st</sup> century, teamwork and the ability to solve problems and learn in groups are increasingly important in the world of work, and every student should know how to work productively with others. Essentially, the procedure of teaching academic writing to students using collaborative learning is proposed by several scholars of Social View of Writing Process (Faigley, 1986: 534-537), Social Constructivist Theory (Vygotsky in Chione, 2020: 2), and Active Learning Theory (Bonwell & Eison, 1991: 1). Here is the conceptual model of the collaborative writing process as well as peer assessment process in collaborative learning:

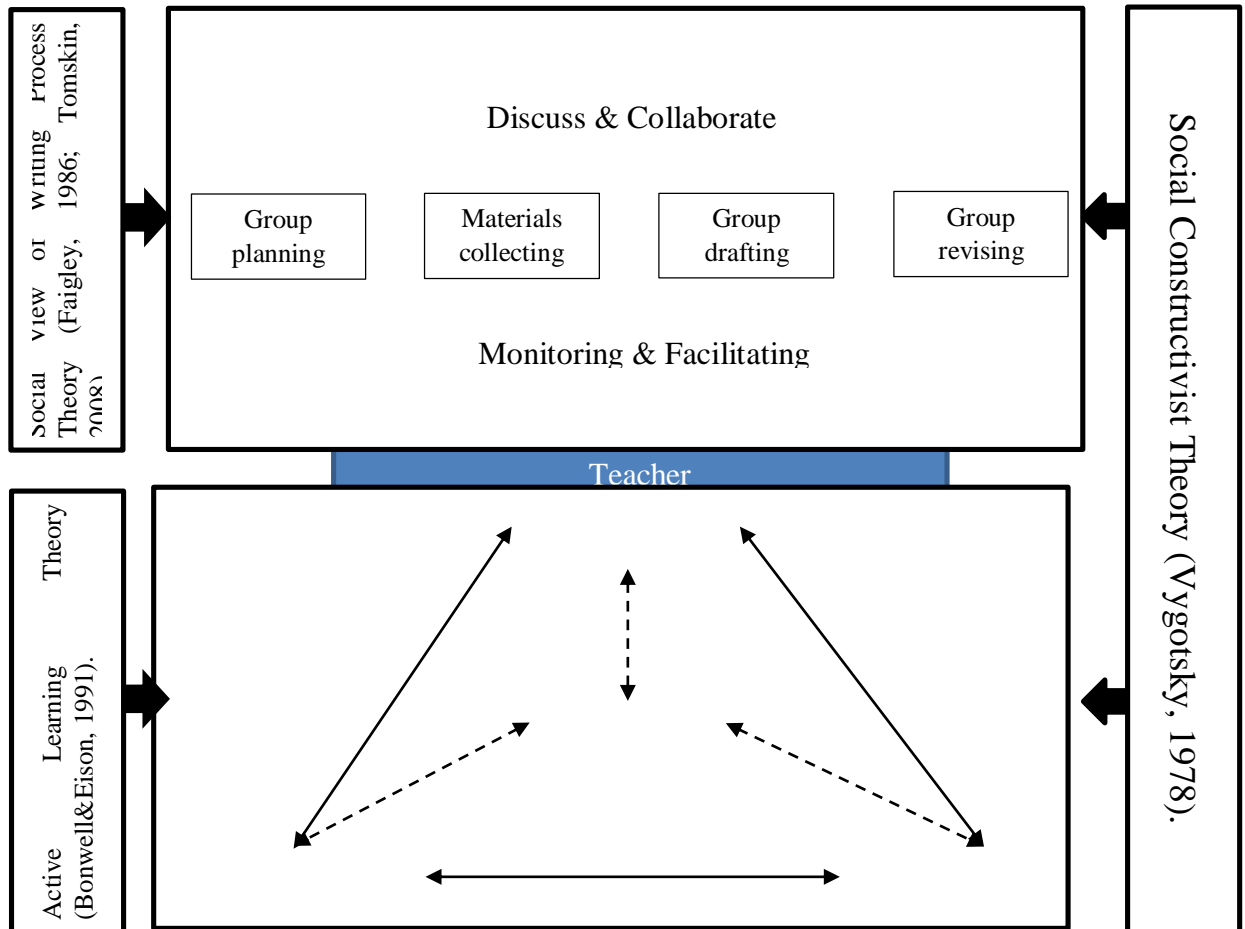


Figure 2. Collaborative Writing & Peer Assessment Processes

As illustrated above, the first step is group planning which includes reviewing tasks to be done and roles of each team-mate, creating an outline or brainstorming the ideas, setting team goals and objectives: milestones, deliverables, due dates, and determining processes for workflow as well as decision making. However, before group planning, they need to get to know each other's skills sets and set expectations.

In the second step, the students come into the material collecting process. A collection plan is a crucial key to developing a sound study. The plan indicates how the authors access and gather information from abundant sources.

The third step is group drafting. Drafting as a team involves composing a draft of a document and each sentence of the group's paper together by either sitting in the same room or collaborating synchronously

online. The drafting work should be together as it differs from cooperative learning in which a group separates the responsibility and does an individual work after receiving a split task. A rough draft is the first segment of the drafting process, where the authors place information on the page. A rough draft may undergo editing by the authors, but it is not the polished version of the assignment. Then, final drafts have been edited numerous times by the authors and may undergo the benefit of a peer review.

The last step includes group revising. Revision is a collaborative process in which students work collectively to communicate with an imagined audience of home-language speakers is a powerful context for focusing on language, for discussing how meaning is sharpened, and creatively engaging with sentence structure. For assessment in collaborative learning, group peer assessment is a communicative strategy that is used by teachers in collaborative work to actively engage students in the learning process by having them assess their peers' work based on the teacher's benchmark (Weaver & Esposito in Almahasneh, 2019: 106). Peer assessment is a form of formative assessment where feedback on the learning is collected from the students themselves. Later, after training students on group peer assessment, students-generated feedback is exchanged with their peers and is used to improve their performance, Final document review to edit and approve content, organization, and style.

The benefits of giving feedback exceed the benefits of getting feedback from the teacher to students as the first involved activating students' metacognition and the ability to question their learning development. Fletcher and Shaw in Schildkamp, et. al. (2020: 9) note that students are given the responsibility to take charge of their learning and the assessment process, they did better and scored higher compared to their peers in the teacher-directed assessment group. Lafave et al. in Almahasneh (2019: 106) describes this type of assessment as a learning autonomy exercise for the students while Bryant and Carless (2010: 5) name it as part of a self-regulated learning process wherein students benefit from giving and receiving feedback from each other in group work.

## 2.8. Advantages and Disadvantages of Collaborative Learning

Every technique has several advantages and disadvantages. Therefore, it is important to determine the advantages and disadvantages to make the implementation of the strategy in the teaching process more effective.

### 2.8.1. The Advantages

Several benefits are associated with the concept of collaborative learning. The advantages of utilizing collaborative learning can be described as follows:

- 1) Collaboration improves dialogue between learners. Explaining difficult concepts and principles to other learners increases one's understanding. As students are exchanging ideas, debating, and negotiating ideas student interest in learning is increased and they are more likely to become critical thinkers (Dooly in Rokhmah, 2020: 18). In collaborative learning, students learn more of what is taught, retain information longer, and are more satisfied with their classes (Dooly in Rokhmah, 2020: 17).
- 2) Students work at higher intellectual levels when working collaboratively than working in isolation (Dooly in Rokhmah, 2020: 18). Students have to re-think their interpretations in the light of explanations by other students (Dooly in Rokhmah, 2020: 18). Students working in isolation cannot check whether they have understood the subject matter. Collaborative learning develops oral communication skills in face-to-face learning, written communication skills in online learning, leadership skills, self-management skills, assists in student retention, and is a preparation for real-life social and employment situations (Cornell University, 2021: 2). Collaborative learning enables students to develop teamwork skills, which is an employability skill (Parente et al. in Lane, 2016: 604). The collaborative learning process enables passive learners under traditional methods to become active learners (Florence in Lane, 2016: 604). on their learning and the effectiveness of the strategies employed (Vassigh et al.,

2014: 84). An experiment with students who had a low level of proficiency in English found that participating in a collaborative learning program increased their self-efficacy and interest in learning English (Law et al., 2015: 1284). The communication taking place between learners and between learners and the teacher would increase the opportunity to practice their English language skills.

- 3) Collaborative learning enables more capable learners to assist in the development of less capable learners who can achieve more than they can while learning individually in isolation (Janssen, 2010: 12). The more capable learners act like teachers and in explaining difficult concepts to their peers, they enhance their understanding of the subject matter. Students who experience a collaborative learning environment are more satisfied with their learning experience than those exposed to the traditional lecture method of teaching (Alavi in Lane, 2016: 604).
- 4) Students obtain a sense of satisfaction in actively engaging in the learning process. In a study of undergraduate students doing engineering courses, it was found that active and collaborative methods produced statistically significant and substantially greater gains in students learning in comparison with the traditional lecture method of instruction. The skills better developed in a collaborative learning environment are design, communication, and group work (Terenzini in Lane, 2016: 604). Online collaborative learning in discussion forums assists distance learners who are otherwise isolated (Du in Lane, 2016: 603). Web-mediated asynchronous collaborative learning enables social interactions unrestrained by space, time, and pace (Cesez-Kesmanovic in Lane, 2016: 602). Unlike face-to-face collaborative learning, online collaborative learning maintains a permanent record of communications taking place in collaborative learning which students can return to and reflect upon. Online

collaborative learning, giving equal opportunity to make contributions to the discussion, is particularly advantageous to students who are shy to speak in public in a face-to-face setting (Dooley in Rokhmah, 2020: 17).

- 5) Students also have more time to do research and reflect before posting an answer to the online forum. An analysis of student contributions to online discussion demonstrates the effectiveness of collaborative learning. There is also evidence that online collaboration could be as effective as face-to-face collaboration (Curtis & Lawson in Sujianto, 2021: 752). When there was online communication between learners, they became more autonomous, more critical in thinking, more effective in knowledge synthesis, performed better in their courses, provided psychological support to each other, reduced the feeling of isolation and dropout rates, encouraged introverts and students of non-western cultures to express their views as they had more time to consider other views and post their responses (Fung in Shukor, 2014: 556). Computer-mediated collaborative learning is a more effective problem-solving strategy than individual learning.

### **2.8.2. The Disadvantages**

Besides the advantages, collaborative learning has also some drawbacks. Students in collaborative learning projects may have a sense of frustration owing to internal and external factors (Makewa et. al., 2014: 16). One reason for the frustration is the perception of the difference in commitment among group members and different study habits (Makewa et. at., 2014: 20). In face-to-face classes, some students may not attend regularly and when they do attend are unable to fully participate as they are unaware of the discussions taking place when they missed the classes. Frustration can lead to students dropping out of the course (Makewa et. al., 2014: 20). Reasons for frustration are the stress of working with people they do not know well; the delay in the interactions and feedback, time pressure, time

zone differences, and the reduced level of cues within the social activity and context.

Some students find interdependence with other students difficult and remain subjective and individualistic (Capdeffero and Romero in Lane, 2016: 605). The fact that some group members do not fully contribute, may lead to a sense of frustration among others. The lack of nonverbal communication cues and the lack of spontaneity led to frustration (Capdeffero and Romero in Lane, 2016: 605). The presence in the group of one member who was the 'expert' and who was dominant was an obstacle to a shared understanding and effort. Some students viewed the group assessment without having regard for individual contributions as unfair. It is important that where the teacher establishes a collaborative learning environment, online or face-to-face, the teacher is an equal participant in the learning process, contributing to the debate and discussion, so that students have the opportunity to learn from the teacher.

Some learners are passive, others may wish to dominate, some are shy to participate, some do not do the work required, some are frightened to present in public, and international students may find it difficult to participate owing to language difficulties (Marjanovic in Lane, 2016: 605). The teacher should offer encouragement to all participants and devise ways of encouraging participation, such as by asking questions from students who do not participate frequently, so that they have to respond. The teacher should also offer praise, publicly and privately, for the contributions made by students to the learning environment.

In the 21st century of learning, Poor IT equipment, faulty electronic supply, or inadequate internet services present obstacles to online collaborative learning (Lukman & Krajnc, 2012: 239). In one study seven problems were found in some collaborative learning situations i.e., student antipathy towards group work, the selection of the groups, a lack of essential group work skills, the free rider,

possible inequalities of student abilities, the withdrawal of group members, and the assessment of individuals within the group (Roberts and McInnerney, 2007: 257).

Although there are some drawbacks to the use of collaborative learning as a teaching strategy, the positive impact it can have on students' learning and development is far more important. Teachers should be aware that what suits some learners does not necessarily suit others. Each teacher should understand the nature of his/her students, and what skills they have and what they do not have, so that appropriate collaborative writing activities can be well-designed and presented at a suitable time.

## **2.9. Theoretical Assumptions**

Teaching academic writing through collaborative learning would give improvement to students' writing ability as well as their critical thinking skills. Regarding some problems proposed in the introduction section that many university students still struggle to think critically and develop their in-depth thinking in composing scientific writing, some aspects of writing especially the way students deliver their arguments are expected to be improved after the implementation of collaborative learning.

Moreover, if the teaching- learning process more attractive and interactive, it will give positive influence to students in understanding the material given by the teacher. Further, there are several steps in implementing the collaborative learning, such as: group planning, which includes reviewing tasks to be done and roles of each team-mate, creating an outline or brainstorming the ideas, and setting the objectives; material collecting process, where the team should collect the information from the abundant source; group drafting, the group involves composing a draft of a document and each sentence of the group's paper together by either sitting in the same room or collaborating synchronously online; and group revising, where students work collectively to communicate with an imagined audience for focusing on language, discussing how meaning is sharpened, and creatively engaging with sentence structure.



The collaborative is one of many techniques that are expected to help the students improve their critical thinking skills in composing effective and well-organized writings. Through collaborative writing, students are impelled to make decisions about the language needed to express their ideas, and thus formulate the structure in which to express those ideas as they produce a text together. Therefore, the analysis aspect of critical thinking is expected to be improved after being taught using collaborative writing. It includes examining ideas, detecting arguments, and analyzing arguments as sub-skills of analysis.

### **2.10. Hypotheses**

Based on the rationale above, the hypothesis can be assumed that there would be the improvement of students' academic writing ability after using collaborative learning. Moreover, there will also the improvement on the aspect of students' critical thinking through collaborative learning.

This chapter already discussed the review to related literature which deals with several points of theories. The next chapter discusses about the method of this research.

### III. RESEARCH METHODS

Research methods are discussed to answer the research questions and achieve the objectives of the research. The research methods consist of research design, subject of the research, data collecting techniques, research procedures, validity and reliability, data analysis, data treatment, and hypothesis testing.

#### 3.1. Research Design

The research is intended to explore the effects of collaborative learning on students' critical thinking and academic writing achievement. The research employs mixed methods which the quantitative data are collected through questionnaires and the qualitative data are collected through observation, writing tests, and document analysis. The research design is a one-group pre-test and post-test design. It means that there is a pre-test before the treatments and a post-test after the treatments. The treatments are held three times. The research design is elaborated as follows:

$$\boxed{T1 \ X \ T2}$$

T1: Pre-test

T2: Post-test

X : Treatments for three times

(Hatch & Farhady, 1982).

#### 3.2. Population and Sample

The population was the sixth semester of undergraduate students majoring in the English Education study program at UIN Raden Intan Lampung. The students in academic writing class were classified into four classes. There were 32 students divided into eight groups of four students as the sample of the population chosen using probability samples in which cluster sampling seemed to be appropriate because the students were selected from a group of academic writing classes rather than an individual. A random sample was taken from the clusters, all of which are used in the final sample (Wilson in Taherdoost, 2016: 21). Cluster sampling was chosen due to this

technique was easy to implement and cost-effective for the researcher. Therefore, from four clusters of English academic writing students, two groups of two members were selected as a sample for this research.

### **3.3. Data Collection Techniques**

To answer the research questions, data are collected from test and non-test. To find out how collaborative learning improves the students' critical thinking in academic writing and which critical thinking aspect mostly improved through collaborative learning is, non-test instruments are employed through observation, document of students' writing, and questionnaire. To find out whether collaborative learning improves the students' academic writing achievement, writing test instrument is administered.

Furthermore, in collecting the data, there are several points to be considered namely variables, instruments, administering writing tests, conducting the observation, collecting the documents, and critical thinking questionnaire.

#### **3.3.1. Variables**

This research has two groups of variables which are dependent and independent. The dependent variable referred to the variable being tested and measured; in this case, the student's writing and critical thinking skills. Moreover, the independent variable in this research is collaborative learning which is changed or controlled to test the effect.

#### **3.3.2. Instruments**

In collecting the data, the instruments are divided into two, test and non-test. The writing test is administered to analyse the students' academic writing achievement, and the non-tests through observation, writing document, and questionnaire are employed to analyse the exploration of collaborative learning activities and the quantitative data of critical thinking.

### **3.3.3. Administering Writing Test**

Writing tests were employed in three meetings to assist the students' progress in improving critical thinking in composing their academic writing skills. The quality standard and criteria of students' argumentative essay writing are scored based on the scoring rubric created by Tribble, (1996: 130) namely content, organization, language use, vocabulary, and mechanics (see appendix 6). The type of writing performance is extensive writing to focus on achieving a purpose, organizing and developing ideas logically, using details to support or illustrate ideas, demonstrating syntactic and lexical variety, and in many cases, engaging in the process of multiple drafts to achieve a final product. Besides, the writing product is in form of an argumentative essay because it provides an opportunity for the students to use their critical thinking skills as a writer by building strong arguments and justifiable claims with valid data, adequate, and relevant evidence, and justifications. It also gives the students the opportunity as a reader in doing peer assessment to be sceptical in a positive way by assessing the quality of other students' arguments (Wallace and Wray, 2011: 7).

### **3.3.4. Conducting the Observation**

Observational skills are the starting point for critical thinking. Observant people can quickly sense and identify a new problem. Those skilled in observation are also capable of understanding why something might be a problem. Therefore, an observation checklist was also utilized for the observer to see whether the teaching and learning processes had already implemented critical thinking and collaborative learning in improving the students' ability in academic writing. The observation checklist is adopted from (Beckman and Westerfield, 2006) shown in table 3.1 as follows:

**Table 3.1. Critical Thinking Observation Sheet**

No.	Students' Activities	Yes	No	Unsure	Inapplicable
1.	The lesson includes the use of critical thinking skills.				
2.	Clear learning goals are in evidence at all times.				
3.	There are student-centered learning practices (The teacher guides rather than "spoon feeds").				
4.	The lesson is flexible and allows students to make choices in their learning.				
5.	Students are motivated, enthusiastic, and on task.				
6.	There is evidence of higher-order thinking and learning (predicts, imagines, analyzes, synthesizes, etc.).				
7.	The teacher allows an appropriate amount of time and pacing for students to complete the task(s).				
8.	More than one "right" answer is possible, so there is more than one way for students to succeed.				
9.	Students complete tasks promptly.				
10.	Transitions between activities are smooth and efficient.				
11.	Type(s) of assessment (peer, self, portfolio, etc.) are appropriate for the learning goals.				

Table 3.1 shows 11 questions where four available choices are provided, such as yes, no, unsure, and inapplicable (See appendix 2). At the end of the questions, there are also comment sections for further improvement of the teacher.

### 3.3.5. Collecting the Documents

The documents are collected from the students' writing. Their writing is explored in form of textual data, for example, the students' writing, comments, and feedback on collaborative learning activities. Next, an inter-rater analysis is conducted and the student writing is examined by the researcher and an English lecturer.

### 3.3.6. Critical Thinking Questionnaire

To get sufficient and valid data, the critical thinking questionnaire was administered to fulfil the quantitative data from the respondents. The purpose of this survey is to see how students utilized critical thinking in their writing. The standardized questionnaire is from the Foundation for Critical Thinking of Dillon Beach, California. The Foundation is a non-profit organization that seeks to improve essential change in education and society through the cultivation of fair-thinking

– thinking which embodies intellectual empathy, intellectual humility, intellectual perseverance, intellectual integrity, and intellectual responsibility (Foundation for Critical Thinking in Umali-Hernandez, A. M., et. al., 2017: 250) (See appendix 1).

The questionnaire consists of 29 items and three dimensions are measured including students' perception of critical thinking in instruction, students' perception of the extent of application of critical thinking, and students' perception of the frequency of application of critical thinking. A four-Likert scale is used to rate each item's responses: 1 (never), 2 (rarely), 3 (frequently), and 4 (daily). Questions asked include the frequency of giving instruction, how critical thinking is being taught, explaining and clarifying certain issues, the manner of giving instruction, how instruction helps them think more clearly, and to see different sides of an argument. The blueprint of the questionnaire is elaborated below

**Table 3.2. Questionnaire Blueprint**

Variable	Dimension	Item number	Number of Items	Source
Student's perception of critical thinking	Critical thinking instruction	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	15	(Foundation for Critical Thinking, 2015).
	The extent of application of critical thinking	16,17,18,19,20,21,22	7	
	The frequency of application of critical thinking	23,24,25,26,27,28,29.	7	

### 3.4. Research Procedures

The research implemented the following steps:






- 1) Determining the problems. A research problem is a specific issue, difficulty, contradiction, or gap in knowledge that will aim to address in the research. The problems can be seen from practical problems aimed at contributing to change, or theoretical problems aimed at expanding knowledge.

- 2) Conducting a critical reading to some sources in E-books, E-journals, and theses to determine the research interest and focus of the research. After choosing a research focus, the gap is found out between the previous studies that have been investigated with the current study. Having gathered the research problems, the research questions are then formulated.
- 3) Determining data collection technique. The appropriate techniques selected for the research are observation sheet, writing test, documents, and critical thinking questionnaire.
- 4) Determining subject of the research. The subject is the sixth semester of undergraduate students majoring in English Education study program at UIN Raden Intan Lampung.
- 5) Administering the pre-test. The pre-test is administered to the experimental class of students before the treatments. The pre-test is given before the treatment to know how far the competence of students in academic writing. By giving the pre-test, some problems of students in writing can be identified. The test is in written form and the material is based on the objective of the research.
- 6) Giving the treatments. The treatments are given for three meetings in the class. The treatment follows the collaborative learning for academic writing as presented in (Figure 2).
- 7) Administering post-test. The post-test is given after the treatment to know whether there is any improvement of students' writing after collaborative learning treatment. The test is in written form and the materials are related to the objectives of the research. The result of the post-test are compared with the pre-test to make sure whether collaborative learning has improved students' ability in writing.

In evaluating the students' academic writing, the researcher used the indicator of scoring rubric of writing by Tribble (1996:130).

It can be seen on the appendix 6 with the final score =  $C+O+V+L+M = 20+20+20+30+10= 100$ .

Example:

	Content	: 20
	Organization	: 20
	Vocabulary	: 20
	Language	: 30
	Mechanics	: 10

- 8) Administering questionnaire of critical thinking skill. The questionnaire is distributed after the treatments.
- 9) Analyzing the questionnaire, interpreting the students' writing, and concluding the data. After collecting the data, the questionnaire is analyzed using descriptive statistics while the students' writing is also observed carefully by two-raters (pre-test and post-test of the two groups by researcher and an English lecturer). The data are analyzed based on the aspects of academic writing. Researcher scores the pre-test and post-test of the experimental group, then put into a table the result of the test. Moreover, researcher calculates the mean of the pre-test and post-test for experimental class. The last is drawing the conclusion from the result of the pre-test and post-test which used Repeated measure T-Test of SPSS (Statistical Package for Social Science) version 23.0 for windows. It is used to find out the means of pre-test and post-test and how significant the improvement is.

### **3.5. Validity and Reliability**

Validity and reliability show whether an instrument has fulfilled the criteria and is considered usable or not. The writing test and questionnaire are the decisive instruments of the research. Therefore, it is important to measure the validity and reliability to get valid and reliable data.

#### **3.5.1. Writing Test Validity**

To ensure the validity of writing test, the test was based on the university syllabus and Semester Lesson Plan (RPS). Therefore, in pre-test and post-test, the materials were suitable for their level and needs in academic writing class. Besides, since the test is conducted to



get the data of the students' writing ability, the content validity of the test is conducted by improving or developing the test based on the concept that had been clarified before organizing the test instrument. Additionally, since the research also focuses on writing ability in forms of written text, the pre-test and post-test measure certain aspect based on the indicators. It is examined by referring the aspects that are measured with the theories of the aspect namely, content, organization, vocabulary, language use, and mechanics. Thus, it has fulfilled the requirement of construct validity.

Furthermore, face validity for the writing test has to be valid by test takers and other untrained observers. It is also concerned with writing test should look proper test in the eyes of the teachers and the students. Thus, an assessment has been done by the teacher, so it has a connection with students' writing needs. Moreover, the tests should be conducted and should provide clear directions so the students are not confused in doing the tests.

### 3.5.2. Writing Test Reliability

Writing is subjective scoring. To avoid subjectivity, inter-rater reliability is used. It stands to ensure the reliability of scoring. Thus, two or more judges or raters independently estimate the score on the test. In this case, the first rater was the researcher and the second was the English lecturer of UIN Raden Intan Lampung. Before scoring the students' writing, it is important to make sure that both raters used the same criteria for scoring. To measure how reliable the scoring is, *Rank – order Correlation* is used with the formula:

$$p = 1 - \frac{6 \cdot \sum d^2}{N(N^2 - 1)}$$

Notes:

p = Coefficient of rank order

N = Number of Students

$D$  = Different of Rank Correlation (mean score from R1 and R2)

$1-6$  = Constant Number

After finding the coefficient between raters, the coefficient of reliability is analyzed with the standard of reliability below:

- a) A very low reliability (range from 0.00 to 0.19).
- b) A low reliability (range from 0.20 to 0.39).
- c) An average reliability (range from 0.40 to 0.59).
- d) A high reliability (range from 0.60 to 0.79).
- e) A very high reliability (range from 0.80 to 0.100).

After calculating the reliability of writing test, the writer found that the test is reliable. (See appendix 11 and 12)

**Table 3.3. Reliability of Writing Tests**

Reliability Statistics		Reliability Statistics	
Pre-test		Post-Test	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.944	10	.957	10

### 3.5.3. Questionnaire Validity

Construct validity is concerned with whether or not the test performance can be described psychologically (Hatch & Farhady, 1982). Prior to gathering data, first, face validity and content validity are applied. A readability test is done on 30 respondents randomly out of the sample of research participants to validate the appearance of the questionnaire, ensure the quality of the questions, and determine how easy or difficult it is to understand each piece of question. Then, content validity is used to assess the internal validity of the questions by consulting an expert in the same field. The expert judgement was taken from the English department of the University of Lampung.

### 3.5.4. Questionnaire Reliability

Fraenkel and Wallen (2012:154) say that reliability refers to the consistency of the scores obtained-how consistent they are for each

individual from one administration of an instrument to another and from one set of items to another. If the test is reliable, we would expect a student who receives a high score the first time he takes the test to receive a high score the next time he takes the test

The reliability of each aspect of the questionnaire is assessed by correlating each item with its construct in SPSS. To know the reliability coefficient of the questionnaire, each item of the questionnaire is analyzed using Pearson Product Moment Correlation. The coefficient of each item of the questionnaire should be higher than the r-table to be reliable for this research. The questionnaire is scored according to the Likert scale whereas the reliability of the questionnaire is measured by using Cronbach Alpha Coefficient because it is the most common scoring to assess the consistency of the indicators in the questionnaire.

After calculating the reliability of questionnaire sheet, the writer found that the test is reliable. (See appendix 13,14,15)

**Table 3.3. The Result of Reliability of Questionnaire**

No	Dimension	Reliability	Criteria
1	Critical thinking instruction	0.886	Good reliability
2	The extent of application of critical thinking	0.913	Good reliability
3	The frequency of application of critical thinking	0.929	Good reliability

### 3.6. Data Analysis

After conducting pre-test and post-test, the result data are analyzed to know whether there is a significant difference in students' writing after being taught through collaborative learning. The analysis is done using the following steps

- 1) Scoring rubric for pre-test and post-test criteria are modified from Tribble (1996: 130) that consists of content, organization, vocabulary, language, and mechanics (see appendix 6).

- 2) Tabulating the result of the test and calculating the score of pre-test and post-test. SPSS is used to calculate the scores then they are analyzed to find out whether there is an improvement in students' writing achievement after collaborative learning.
- 3) Drawing the conclusion. The conclusion is developed from the result of statistical computerization that is repeated measure T-test in SPSS.

### **3.7. Data Treatment**

Firstly, the data of students' critical thinking skills was collected from observation sheet. The skill data was in form of textual data in collaborative learning activities, for example interpretation, analysis, evaluation, inference, explanation, and self-regulation. Next, it was analyzed descriptively through these steps:

- 1) Coding: the data from observation sheets supported by the documents of the students' collaborative learning activities log are represented in codes, for example CT1 for Critical Thinking Skill 1 in collaborative learning activities, and so on.
- 2) Categorizing: classifying the students' critical thinking skills.
- 3) Generating theme: developing the category of the students' critical thinking skills and interpreting based on the observer's point of view and perspectives in the literature.

Secondly, in analyzing the effects of collaborative learning on writing achievement, the students' writing achievement was analyzed based on the means of the students' scores of the pre- and post-tests

### **3.8. Hypothesis Testing**

Hypothesis testing is used to prove whether the hypothesis proposed in this research is accepted or not. To prove the quantitative data of the students' writing achievement, SPSS is used to know the significant improvement of the treatments effect. The hypothesis is analyzed using a repeated measure T-test of SPSS. The level of significance is 0.05 in which the hypothesis is approved if  $\alpha < 0,05$ . It means that the probability of error in the hypothesis is only 5%. The hypothesis testing stated as follows:

- 1)  $H_0$ : There is no improvement in students' academic writing ability after being taught using collaborative learning. The criteria  $H_0$  is accepted if the alpha level is higher than 0.05 ( $\alpha > 0.05$ ).
- 2)  $H_1$ : There is an improvement in students' academic writing ability after being taught using collaborative learning. The criteria  $H_1$  is accepted if the alpha level is lower than 0.05 ( $\alpha < 0.05$ ).

## V. CONCLUSIONS AND SUGGESTIONS

This chapter describes the conclusion of the discussions and also the suggestions to the other researchers and English teachers who want to utilize collaborative learning to improve the students' critical thinking in academic writing and for those who want to conduct the similar research.

### 5.1. Conclusions

The research concerns on exploring the students' critical thinking in collaborative learning and its effects on their writing achievement. To conclude, several points can be elaborated.

First of all, in relation to exploration of the students' critical thinking in collaborative learning, students' critical thinking in collaborative learning activities seemingly happen in group drafting & revising. The critical thinking skills that may occur in the activities are Inference, Explanation, and Self-Regulation.

Secondly, students' perception on the frequency of critical thinking application shows that in collaborative learning, the students tend to apply critical thinking sub-skill named Analysis. It appears to lead the students to make collaborative predictions based on possible options and actual evidence. On the other hand, in collaborative learning the students may seldom interpret by making collaborative predictions based on possible options and actual evidence.

Thirdly, based on the effects of collaborative learning on students' academic writing achievement, collaborative learning can improve the students' academic writing achievement.

In short, those are the several points concluded from the students' collaborative learning activities and its effects on their critical thinking and writing achievement.

### 5.2. Suggestions

In reference to the conclusions, several suggestions are given for both English teachers and further research.

### **5.2.1. Suggestions for English Teachers**

Based on the research had been conducted by the researcher, it was found that most of students' writing errors identified by the students are in term of grammar. Moreover, since the students are mostly tended to focus on correcting grammatical errors and ignored the other aspects of writing, it is suggested that the English teachers guide the students first to understand the aspects of writing before performing peer correction so that students can improve the aspect of writing.

### **5.2.2. Suggestions for Further Researchers**

This study discussed the students' critical thinking on academic writing ability by implemented collaborative learning. Based on the current research, it is expected the further researchers can focused on specific analysis of the effects of collaborative learning on each aspect of writing improvement since this study concerns about the holistic score of writing achievement. Thus, the positive effects of collaborative learning on each aspect of writing improvement can be fully explored.

The researcher also may apply more participants in order to enhance the generalization and transferability of the finding of the research. It is also suggested that similar study can be applied in different level of students, for example senior high school level. The different context and setting may be worth investigation since it may discover new findings and values of collaborative learning to improve critical thinking.

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