

# Exploring Critical Thinking in Writing

Zulaikha Khairuddin<sup>1\*</sup>, Wan Faizatul Azirah Ismayatim<sup>2</sup>, Othman Ismail<sup>3</sup>, Noor Hanim Rahmat<sup>4</sup>, Nur Adibah Zamri<sup>5</sup>

<sup>1,2,3,4,5</sup>*Akademi Pengajian Bahasa, Universiti Teknologi MARA, Shah Alam, Malaysia*

*\*Corresponding author. Email: zulaikha5497@uitm.edu.my*

## ABSTRACT

Is writing a thinking process? Writers are expected to apply information they already know to gather materials suitable for their essays. They have to use declarative knowledge to practise the skills of analysing information, and synthesising information. Next the writers need to use procedural knowledge to make decisions about downloading the content of the essay. However, not all materials gathered are suitable for their essay. They also need to use metacognition to evaluate information to make the materials work best for their writing task. This qualitative study explores the connection between critical thinking skills and the writing process. Open-ended responses from 20 postgraduate students who attended research writing courses were analysed based on categories of critical thinking skills used in their writing process. The findings reveal interesting implications for learning and teaching academic writing to postgraduate students. The significance of this study is two-fold. Firstly, findings in this study will reveal how writing mirrors the thinking process. Secondly, the results of this study will encourage writing teachers to focus on the learners' thinking process as much as their writing process in the teaching of writing.

**Keywords:** *thinking, writing, declarative knowledge, analysing information*

## 1. INTRODUCTION

“Critical thinking is the skill of correctly evaluating arguments made by others and composing good arguments of your own.” Rainbolt and Dwyer (2012, p. 5).

### 1.1. Background of Study

Critical thinking skills cannot be DISPLAYED through learning and acquiring the knowledge no matter how long or how much the learning process has been experienced.

Critical thinking is the intellectually and skilfully disciplined way in which a learner is experiencing an active process of conceptualising, applying, analysing, synthesising, and/or evaluating information gathered from, or generated by. It is somewhat easier to explain, ‘What critical thinking is NOT’ than trying to explain ‘What critical thinking IS’. Why? This is because many people claim that they have undergone critical thinking courses. Therefore, by default as a course-taker, they have studied critical thinking, have completed a course on critical thinking, and have mastered critical thinking. The use of different types of knowledge either hinders or facilitates critical thinking skills. Declarative knowledge such as factual and conceptual knowledge alone do not promote critical thinking. However, the process of elaborating critical thinking does require the explanation of some declarative knowledge.

The way learners use their knowledge can encourage critical thinking skills. There have been many talks about

how to teach critical thinking skills and the ‘critical thinking’ course tends to be a stand-alone course. In fact, critical thinking is a course that is commonly offered at many universities (Murawski, 2014). People say it is taught to improve the thinking of students. Critical thinking incorporates how learners develop their thoughts. Past studies have seen the link between writing and critical thinking. If this is so, what aspects of the writing mirror critical thinking skills?

This study is done to answer the following questions:

- How do writers Apply information in academic writing?
- How do writers Analyse information in academic writing?
- How do writers Synthesise information in academic writing?
- How do writers Evaluate information in academic writing?

## 2. LITERATURE REVIEW

### 2.1. Introduction

In this section, the theories that are related to ‘Critical Thinking’ and ‘Writing is Thinking’ are discussed. Other than that, past studies are also explained in this section.

### 2.2. Critical Thinking

Many have come out with numerous definitions of critical thinking; and all the definitions are true. According

to Scriven and Paul (2004), critical thinking is made up of two components. The first is (a) a set of information and belief generating and processing skills. The next is (b) the habit, based on intellectual commitment and he/she has to use those skills to guide his/her behaviour. Commanger (1992), Scriven and Paul (2004), and Dostal (2015) further reported that skills in critical thinking further help individuals to sharpen their problem-solving skills. Hence, critical thinking is a habit that ‘thinkers’ live by.

Next, critical thinking is a mode of thinking by a person. Paul and Elder (2008) listed some basic conceptualisations of critical thinking. Some of the concepts of critical thinking are listed below:

- (a) self-guided and self-disciplined thinking,
- (b) the ability to think rationally and reasonably, as well as emphatically,
- (c) the ability to diminish one’s own egocentric and sociocentric tendencies,
- (d) the ability to use intellectual tools, such as concepts and principles that facilitate analysis. Assessment and improvement of thinking, and
- (e) being in the state of awareness that no matter how skilled one is, one can always improve their reasoning skills.

Among some of the many challenges writing teachers face is when they have to teach academic/research writing. Academic writing demands the use of many skills on the part of the writer. To begin with, skills in academic writing are a test of the writers’ critical reading abilities. The writer no longer reads to understand the information presented only. The writer must know what to digest to be included in his/her writing. The writer needs to be able to know what to do with the information found in readings. It is not a mere reporting or knowledge-telling of the facts and information in the reading text. What the writer does with what he/she has read is one of the marks of his/her critical thinking abilities.

### **2.3. Writing is Thinking**

Writing can be seen as a thinking process. Bereiter and Scardamalia (1987) reported that good writers actually use their critical thinking skills in their writing journey. Bereiter and Scardamalia (1987) also stated that what differentiates between novice and expert writers is the use of critical thinking skills while writing. Ideally, using critical thinking skills can make writers become good writers.

Figure 1 shows the writing process of a writer who ‘knowledge-transforms’ his/her information into written text. Bereiter and Scardamalia (1987) reported that the expert writer begins the writing assignment by making plans (problem analysis and goal setting about the essay writing). This plan is made with the content knowledge and the discourse knowledge that the writer has (or does not have). Solving (after translating what the problem is) content problem space would be making efforts to add suitable content in the essay. Solving rhetorical problem space (after translating/understanding what the problem is) would be making efforts to understand the rhetorical

demands of the assignment. After this, the writer will then depend on his/her memory of content or discourse knowledge (knowledge-telling process) to complete the writing assignment. According to Bereiter and Scardamalia (1987), solving a problem for an expert writer may lead to the generation (and further solution) of another problem. For example, an expert writer found that he/she needs to add more ideas in a paragraph. Addition of an idea would mean “where do I get it?”, “how can I support the addition of this new idea?”, and “can this new idea fit into my existing framework” and many more problems. This expert writer has in fact used his/her critical thinking skills to make decisions on problem translation and problem solution while he/she writes. He or she makes decisions to analyse, synthesise, evaluate, and even apply information in the whole writing process. Critical thinking is, therefore, not a tool for writers to present their arguments. It is a habit the writers acquire as they gain more confidence in having undergone many stages of the knowledge-transforming process through their many explorations of writing academic texts.

### **2.4 Past Studies**

Critical thinking skills are needed to write good introductions. A study done by Paronomasia et al. (2019) explored students’ introductions and looked into the perception of students who wrote them. Eleven students who wrote their background of study were interviewed. The findings revealed that critical thinking is one of the important aspects used for creating a background for studying in research. Students admitted that critical thinking skills are needed to connect ideas and facts rationally.

Academic writing can be challenging for students. The study by Tahira and Haider (2019) looked at some challenges postgraduate students faced and how they overcame the problems. Three postgraduate students were interviewed for this study. The findings show that the students, despite coming from different traditions of discourse, have a detailed understanding of critical thinking. They were also reported to use their critical thinking skills in their writing process. The findings also showed that although cultural background plays a role in influencing their writing styles, the students have the capacity to learn and master a new discourse. The problems they encountered were due to uncertainty in demonstrating an argument, insufficient subject knowledge, and problematic issues surrounding the essay genre, such as authorial voice and assessment demands. This was also reported by Rahmat, Aripin, Lin, Whanchit, and Khairuddin (2020) who discovered that there was a connection between critical thinking skills and academic writing. The study investigated how the writing (how writing) process mirrors critical thinking skills. This quantitative study is done on 207 first semester undergraduate students who signed up for an academic writing course in a public university in Malaysia.

Next, the study by Moeti, Mgawi, and Moalosi (2017) was conducted to identify factors contributing to the application of critical thinking among teacher trainees. Data

was collected from 59 trainee teachers and two focus group discussions comprising five students in each focus group. The findings revealed that the teacher trainees had a lower description of critical thinking during interviews, but refined during focus group discussions; however, the students were wide aware of factors influencing their inabilities to think critically during their training. These findings clearly indicated that most students were not applying critical thinking during their training.

## **2.5 Conceptual Framework**

The conceptual framework of the study is presented in Figure 2. It is rooted from the three concepts of problem solving by Dostal (2015) and critical thinking skills by Haase (2010).

### **2.5.1. Problem-Solving Skills**

The behaviour of writers during the process of solving problems builds the habit of using critical thinking skills. Dostal (2015) reviewed several definitions of critical thinking and summarised three main habits, which are (a) conflict, (b) willingness to deal with the problem, and (c) learning from the solution.

### **2.5.2. Critical Thinking Skills**

The study by Haase (2010) categorised four abilities that display critical thinking skills. The categories are conceptualising information a person is said to have conceptualised the information when after undergoing some activities, the person forms an idea or principle of how the newly learnt concept.

- (a) Applying Information (Writers may do some reading before they begin writing. Some may use the information they have read up as details in their writing.)
- (b) Analysing Information (Not many writers are able to make an analysis of what they have read. Some use the read information into their essays without deciding on its relevance to their writing.)
- (c) Synthesising Information (Good writers are able to combine information from different sources to be used in their write-up.)
- (d) Evaluating Information (The advent of an open information system sometimes makes readers unaware of irrelevant information. Ideas that are not properly assessed are often used to support arguments that may end up being weak with flaws.)

## **3. METHODOLOGY**

### **3.1. Research Design, Population, and Sample**

This qualitative research is done to explore the extent of the use of critical thinking skills in the writing process. The population is taken from a group of postgraduate students who had undergone a semester of research writing. Using a

purposive sampling method, 20 samples were chosen to participate in this pilot study.

### **3.2. Instrument**

The instrument used was a set of open-ended questions of the writers' perception on their experience during the write-up of research writing assigned to them throughout the semester. The questions were divided into four main categories: applying information, analysing information, synthesising information, and evaluating information, based on the study by Haase (2010). The answers that writers responded to were then sub-categorised into "challenges faced", "how did you solve?", and also "what did you learn?". These three categories were adapted from Dostal (2015), which are (a) conflict, (b) willingness to deal with the problem, and (c) learning from the solution.

### **3.3. Method of Data Collection and Data Analysis**

Data was collected through students' responses in the open-ended questions. The data was analysed based on the responses and the responses were coded based on the categories by Haase (2010).

## **4. FINDINGS**

### **4.1. Introduction**

This section reports the qualitative findings for the data collected. The data is analysed based on the categories by Haase (2010), which are (a) apply, (b) analyse, (c) synthesise, and (d) evaluate. This section presents the answers to the four research questions:

- (a) How do writers Apply information in academic writing?
- (b) How do writers Analyse information in academic writing?
- (c) How do writers Synthesise information in academic writing?
- (d) How do writers Evaluate information in academic writing?

The findings were discussed further in sections 4.2, 4.3, 4.4, and 4.5.

### **4.2. Findings for Applying Information**

Research Question 1: How do writers Apply information in academic writing?

The process of critical thinking involves problem-solving in the process of writing. So, this process involves facing challenges, learning to solve the challenges, and getting the 'take-away' from the process of application of information. Some responses for Applying Information are seen below. (Table 1).

**Table 1.** Findings for “Applying Information”

CHALLENGES/ CONFLICT	DEALING WITH THE PROBLEM	LEARNING FROM THE SOLUTION
<ul style="list-style-type: none"> <li>• Finding articles to related topics</li> <li>• Findings recent articles</li> <li>• Could not find research-based articles</li> </ul>	<ul style="list-style-type: none"> <li>• Use keywords</li> <li>• Extend keywords, make keywords more specific</li> <li>• Use multiple keywords to search for articles</li> <li>• Some even paid for the journal articles</li> </ul>	<ul style="list-style-type: none"> <li>• Keywords are very helpful</li> <li>• Learnt about how people write research and use as models/ examples</li> </ul>

Table 1 shows the accumulated data from the writers’ open-ended responses. The responses were analysed, and the recurring comments were reported. Writers faced conflicts, they dealt with the problem, and they then learnt from the solution. Among some of the common challenges faced are “finding articles related to topics”, “finding recent articles”, and “inability to find research-based articles”. Next, writers responded to the challenges by dealing with the problems. Some writers use keywords, some extend the keywords to make the keywords more specific, while some even pay for the articles. What did the writers learn? They found that having specific keywords were helpful. They also felt that they had learnt about how people write their research and decided to use some research as models.

**4.3. Findings for Analysing Information**

RQ: How do writers Analyse information in academic writing?

According to Dostal (2015), one behaviour of critical thinkers is the ability to analyse information. This analysis is done by the writer in the initial stages of the writing process, and even throughout the activity.

**Table 2.** Findings for Analysing Information

CHALLENGES/ CONFLICT	DEALING WITH THE PROBLEM	LEARNING FROM THE SOLUTION
<ul style="list-style-type: none"> <li>• Some articles had good content, some did not fit the criteria</li> <li>• The keywords led to too many articles, sometimes unnecessary ones</li> <li>• Some information contradicts with topic</li> <li>• Hard to pinpoint the exact information that was needed</li> <li>• Led to overgeneralization of scope</li> <li>• One keyword leads to an endless search</li> <li>• Found too many articles and wasting time reading too much, lost focus</li> </ul>	<ul style="list-style-type: none"> <li>• Take down notes, read to understand better</li> <li>• Only chose articles I can understand</li> <li>• Prepare a table so I can list information into categories</li> <li>• Focus on the topic of assignment</li> <li>• Summarise each article used</li> <li>• Collect and compare the information before building the foundation of the theories</li> </ul>	<ul style="list-style-type: none"> <li>• Critical reading</li> <li>• Improve reading skills</li> <li>• Divergent articles enrich my knowledge to decide key points or main ideas</li> <li>• Learn to establish scope</li> </ul>

• Style of writing difficult to understand	• Focus on “what I need” only	
--	-------------------------------	--

Another thinking strategy in writing is by analysing information. Table 2 shows the responses by writers on analysing information. Problem solving begins with facing challenges, then dealing with the problem and finally, learning from the solution. In the process of analysing information, writers may face some challenges. For one, writers may find out that their initial keyword has led to more confusion – “the keyword led to more articles, sometimes unnecessary”, “led to over-generalisation of the scope” (Table 2). How did the writers deal with the conflict? One writer chose to ‘summarise each article’ first, while another writer learnt to ‘focus only’ on what she needed. What is the take-away from the conflict resolution? Some said they learn to improve their ‘reading skills’, and another said she used her ‘critical thinking’ skills.

Based on the findings, it was found that the writers were facing challenges when they wanted to write research articles/writing. However, they managed to deal with the problems by listing the solutions that can be considered. These three steps taken by the writers were in line with Dostal’s (2015) summary of critical thinking. Dostal (2015) reviewed several definitions of critical thinking and summarised three main habits, which are (a) conflict, (b) willingness to deal with the problem, and (c) learning from the solution.

**4.4. Findings for Synthesising Information**

RQ 3: How do writers Synthesise information in academic writing?

Another way to find a solution to conflicts, critical thinkers would synthesise all evidence - to make sense of the problem as a whole. Synthesising is a major part of academic writing.

**Table 3.** Findings for Synthesising Information

CHALLENGES/ CONFLICT	DEALING WITH THE PROBLEM	LEARNING FROM THE SOLUTION
<ul style="list-style-type: none"> <li>• Summarizing details takes great focus</li> <li>• Time consuming</li> <li>• Summarising is difficult</li> <li>• Difficult to narrow down</li> </ul>	<ul style="list-style-type: none"> <li>• Read more</li> <li>• Be selective and critical</li> <li>• Focus on understanding</li> <li>• Make comparison with other articles</li> <li>• Come up with a table and fill in the information</li> </ul>	<ul style="list-style-type: none"> <li>• New knowledge</li> <li>• Proper organization of ideas</li> <li>• Get specific ideas</li> <li>• Model good writing from articles</li> </ul>

The process of synthesis is one of the most difficult skills to master by writers. Some writers attempted to synthesise but ended up summarising related writings by other writers. Table 3 presents the findings for synthesising

information by writers. Some conflicts writers faced are “summarising needs focus”, “synthesising is time-consuming”, and many found it “difficult to narrow down”. ‘Narrowing down’ refers to the attempt of the writer to synthesise what he/she has read from past writers. The postgraduate writers in this study felt that they can better synthesise if they “read more, be selective and critical”, and a few also mentioned they “come up with a table to fill in information”. Interestingly writers felt they gained “new knowledge”, and some also “modelled good writing from the articles”.

**4.5. Findings for Evaluating Information**

RQ4: How do writers Evaluate information in academic writing?

Dostal (2015) reported that critical thinkers would come out of the problem not only with the solution, but also by learning from the solution.

**Table 4.** Findings for Evaluating Information

<b>CHALLENGES/ CONFLICT</b>	<b>DEALING WITH THE PROBLEM</b>	<b>LEARNING FROM THE SOLUTION</b>
<ul style="list-style-type: none"> <li>● Cannot see relationship of ideas</li> <li>● Cannot make relationship with past studies</li> <li>● Not enough information</li> <li>● Feeling of redundancy</li> </ul>	<ul style="list-style-type: none"> <li>● Find more articles</li> <li>● Read to link</li> <li>● Find the association</li> </ul>	<ul style="list-style-type: none"> <li>● Don’t be quick to conclude</li> <li>● Be better organized checking</li> <li>● Fresh insight</li> <li>● Adapt</li> <li>● Summarise</li> </ul>

In the writing process, evaluation information is equally important as the other stages in writing. Table 4 shows the findings for evaluating information in writing. Writers report that when they “cannot see the relationship of ideas”, or they “cannot make relationships with past studies”, they therefore find it difficult to evaluate the information. How did they deal with this conflict? Some looked further for “more articles”, and also focused their reading to “find the association” in what they are reading. Some writers felt this activity helped them to be “better organised”, while others found they gained “fresh insight” of the issue.

**5. CONCLUSION**

**5.1. Summary of Findings and Discussions**

The writing process involves the writer solving problems throughout the writing process. According to Dostal (2015), critical thinking is part of problem-solving skills. Thus, writers use critical thinking and problem-solving skills in the writing process throughout the process of using knowledge and facts from materials obtained. Technically, the writing process demands that the writer analyses and solves problems as they write.

Perhaps what makes academic writing difficult is the fact that it mirrors critical thinking. Not many have critical thinking skills. Critical thinking skills is not a course students take and if they get good grades for the course, they have excellent critical thinking skills. The real test of any skills learnt would be the learners’ ability to apply that set of learnt skills in other situations. Writing is a process that a writer goes through and ends up not only with the written text, but also more understanding of the issue written through readings of material prior to the write-up. Hasse (2010) mentioned critical thinking skills used in writing are application, analysis, synthesis, and evaluation. These skills are backed up by problem-solving skills, such as (a) attending to conflicts, (b) willingness to deal with the problem, and (c) learning for the solution. The study by Tahira and Haider (2019) also reported that postgraduate writers display critical thinking skills in their writing process.

**5.2. Pedagogical Implications and Suggestions for Future Research**

The teaching on critical thinking is not a separate entity from the teaching of academic writing. Good writing teachers are able to “walk the learners through” the writing process and at the end of the process, learners build the habit of being critical thinkers. Tahira and Haider (2019) suggested that university departments and tutors review their writing instruction and guidelines to make the requirements of argument more explicit and easily understandable. In the long term, writing teachers should re-evaluate the norms of the traditional essay form to accommodate a wider spectrum of expression. Next, Moeti, Mgawi, and Moalosi (2017) suggested that promoting the habit of critical thinking could begin with the teaching of identified strategies to promote the application of critical thinking in areas of programme content, teaching and assessment methods and techniques, programme logistics, and personal attributes. Future researchers could explore the cognitive abilities of writers during their writing process to investigate how critical thinking skills are used in the writing process.

**REFERENCES**

[1] Bereiter, C., and Scardamalia, M. (1987). *The Psychology of Written Composition*. Hillsdale, NJ: Lawrence Erlbaum Associates.

[2] Bereiter, C. and M. Scardamalia, 2014. Knowledge building and knowledge creation: One concept, two hills to climb. In S. C. Tan, H. J. So, J. Yeo (Eds.), *Knowledge creation in education*. Singapore: Springer. pp: 35-52.

[3] Commager, H. S. (1992) *Critical Thinking: What, Why and How. The Logical Illogical Animal*. Proceedings of the Twelfth Annual International Conference on Critical Thinking and Education Reform. August 9-12, 1992. Retrieved from [http://www.criticalthinking.org/files/12th Annual CTConf-opt.pdf](http://www.criticalthinking.org/files/12th%20Annual%20CTConf-opt.pdf)

- [4] Dostal, J. (2015) Theory of problem Solving. *Procedia-Social and Behavioural Sciences*. Vol 174(12 Feb 2015), pp2798-2805. Retrieved from <https://www.sciencedirect.com/science/article/pii/S1877042815010290>
- [5] Haase, F., 2010. Categories of critical thinking in information management. A study of critical thinking in decision making processes. *Nomads Critical Magazine of Social and Legal Sciences*, 27. Available at: <https://webs.ucm.es/info/nomadas/27/feehaase.pdf>
- [6] Flower, L. and Hayes, J. (1981) A Cognitive Process Theory of Writing. *College Composition and Communication*, Vol 31(21), pp 21-3
- [7] Moeti, B., Mgawi, R. K., and Moalosi, W. T. S. (2017) Critical Thinking among Post-Graduate Diploma in Education Studies in Higher Education: Reality or Fuss? *Journal of Education and Learning*, V 6(2), pp 13-24. Retrieved from <https://eric.ed.gov/?id=EJ1125132>
- [8] Murawski, L. M. (2014) Critical Thinking in the Classroom...and Beyond. *Journal of Learning in Higher Education*, Vol 10(1), pp 25-30. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1143316.pdf>
- [9] Paul, R. and Elder, L. (2008) *The Miniature Guide to Critical Thinking Concepts and Tools*, Foundation for Critical Thinking Press, 2008
- [10] Pramojati, S., Carella, D. N., Fitriyah, W., D., and Sari, I. Y. K. (2019) Students' Critical Thinking in Writing Background of Research. *Advances in Social Science, Education and Humanities Research*, Vol 434. International Conference on English Language Teaching (ICONELT 2019). Retrieved from <http://creativecommons.org/licenses/by-nc/4.0/>.
- [11] Rahmat, N. H., Aripin, A., Lin, N. M., Whanchit, W., and Khairuddin, Z. (2020) Exploring the Connection between Critical Thinking Skills and Academic Writing. *International Journal of Asian Social Science*. Vol 10(2), pp 118-128. Retrieved from <https://doi.org/http://dx.doi.org/10.18488/journal.1.2020.102.118.128>
- [12] Rainbolt, G. W., and Dwyer, S. L. (2012). *Critical thinking: The art of argument* (2nd ed.). Stamford, CT: Cengage Learning.
- [13] Scriven, M., and Paul, R. (2004). *Defining Critical Thinking: A Draft Statement for the 'National Council for Excellence in Critical Thinking*. Retrieved from: <http://www.criticalthinking.org/University/defining.html>.
- [14] Tahira, M. , and Haider, G. (2019) The Role of Critical thinking in Academic Writing: An Investigation of EFL Students' Perceptions and Writing Experiences. *International Journal of Primary Education*, Vol 8(1), pp 1-30. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1243509.pdf>
- [15] Wallmann, H. W., and Hoover, D. L. (2012) Research and Critical Thinking: An Important Link for Exercise Science Students Transitioning to Physical Therapy. *International Journal of Exercise Science*, Vol 5(2), pp 93-96. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4738974/>