



KNOWLEDGE TRANSFORMING IN WRITING: AN ANALYSIS OF READ-TO-WRITE PROCESS

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Abstract:

Academic writing depends on the critical reading abilities of the writer. This is because writers need to read materials to be used as support and evidence in their writing. The writing process of an academic writer mirrors the knowledge transforming model. The link between reading and writing has been established by past studies. The read-to-write process is the academic writing process that writers go through but focused more on the reading activities to prepare for materials to be included in the essay. This study is done to explore the perception of writers in their reading stage (read-to-write process). 176 undergraduates taking academic writing course were randomly chosen to respond to the instrument. The instrument is a 5 Likert-scale with 34 items on topics pertaining to variables found in the knowledge transforming model. Findings reveal that writers take alternative roles and reader and writer in the writing process. Findings also reveal interesting pedagogical implications in the teaching and learning of both academic reading and writing.

Keywords: academic writing, writers, readers, knowledge transforming, read-to-write

1. Introduction

1.1 Background of Study

The process taken by the academic writer is different from the process of a non-academic writer. Novice writers of academic texts would need some time to make the transition from essays that is written using personal experiences and emotions to essays that require them to support with evidence. One obvious transition is the need to read before writing. According to Knott (2020), academic writing depends on critical reading. Writers need to read materials to use as support and evidence their ideas.

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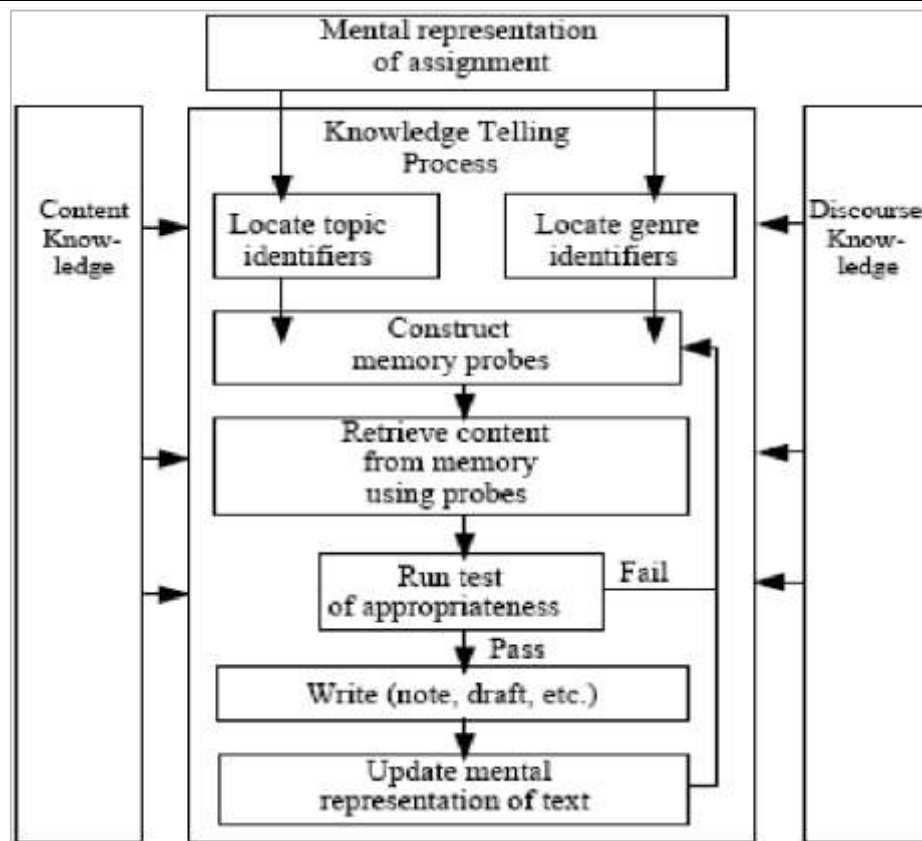


Figure 1: Knowledge Telling Process
 (Source: Bereiter and Scardamalia, 1987)

Sometimes, novice writers regurgitate what they have read and transfer the information as information for the essay. Similarly, some writers may extract ideas from their memory and use that retrieved ideas as evidence in the essay. This process is referred to as ‘knowledge-telling’ by Bereiter and Scardamalia (1987) and this process is shown in Figure 1 above. According to Bereiter and Scardamalia (1987), after understanding the needs of the writing assignment, less skilled writers began their writing activity by locating topic identifiers related to demands of the essay title. The writer then proceeds to locate the genre identifier to suit the needs of the essay assignment. Then, the writer would construct his/her memory probes to see if he/she had any background knowledge of the topic and genre. The writer then retrieved the content of the essay from his/her memory using probes. This process is considered easy when the writer feels that he/she had previous content and discourse knowledge suitable for the writing assignment. The writer then begins his/her first draft. He /she checks the appropriateness of the work from memory and the written assignment is considered completed. The whole writing process do not usually take long. This is supported by Rahmat (2011) who found that less skilled writers do not make plans before writing (or they spend less time planning), they also consider writing as an easy process. Even if they did edit /revise their work, they would spend time correcting grammatical errors or adding the content.

Students making the transition from narrative writing in secondary schools to academic writing in higher institutions of learning may find the transition overwhelming. This is because, they would have to deal with changes in the way they write and also reading before they could even begin writing. According to Matarese (2013), critical reading is needed for academic writing otherwise writers may regurgitate the information from reading materials to their essays. Almost always, academic writing begins with careful reading of chosen materials. This process can be seen as 'read-to-write'. Delaney (2008) referred to this term as "reading-to-write". This term can be seen from two perspectives; (a) pedagogical and (b) theoretical. Pedagogically, this term refers to the instructional tasks that combine reading and writing for a variety of educational purposes such as summarising as a learning tool. Next, theoretically, writers writing academic essays need the skills of reading before they can proceed to display their writing skills.

Writing and reading are inter-related when it comes to academic essays. From the reading perspective, a writer needs to use his/her reading skills to summarise information, to integrate ideas, and also synthesise several ideas to be combined to suit the needs of the academic essay. From the writing perspective, writers use their reading comprehension skills to access topic knowledge, to understand the tasks, and to revise or evaluate the written outcome.

2. Statement of Problem

The problem with writing is writers lack of reading skills. A simple, confusing statement that shows how reading is related to writing. Delaney's (2008) 'reading-to-write' process clearly shows that writers need to use reading comprehension skills in order to prepare for writing. From the constructivist perspective, reading comprehension and composing are seen as processes of building meaning by the writer. (Delaney, 2008).

In addition to that, reading comprehension involves many stages. Readers use their reading skills to make sense of what is read and also to utilise the information found in the reading materials. If the reader does not have critical reading skills, he/she may end up regurgitating information from one form to another. According to Spivey, 1997), the construction of meaning involves three levels; organising, selecting and connection. What are readers/writers doing at each of the reading stages? Hence, this study explores the reading behaviour of readers/writers in preparation for their writing activity.

2.2 Objective of the Study

The main objective of this study is to explore what writers do when they read materials to prepare for their writing. This study is under the assumption that academic writers use reading materials to support their writing. Specifically, this study investigates how writers show their problem analysis during read-to-write process. This study is also done to explore how writers solve problems with content and discourse knowledge during read-to-write process and also how writers perceive problem translation during the process. The findings would be done to answer the following questions;

- 1) How do writers display problem analysis during read-to write process?
- 2) How do writers solve problems with content knowledge during read-to write process?
- 3) How do writers solve problems with discourse knowledge during read-to-write process?
- 4) How do writers perceive problem translation during read-to write process?

3. Literature Review

3.1 Introduction

The read-to-write process outlines the journal of an academic writer. This process begins with the writers going through the reading part. In order to become an informed academic writer, he/she has to begin by reading materials to be included as argument and evidence in the essay. This section presents theories of writing from the perspective of Knowledge Transforming model and also theories that explain reading comprehension. This section is further enhanced with a section on past studies.

3.2 Read-to-Write Process and Knowledge Transforming

The link between reading and writing has been established by past studies. Delaney (2008) reported that language proficiency can affect reading-to-write performance in many ways. Less proficient second language readers or writers can face difficulties with English vocabulary, grammar, syntax and even discourse-level reading and writing skills. These difficulties can then affect their reading and writing process. Besides, language there are also other issues pertaining to reading-to-write process. Reading-to-write tasks can be placed on a continuum of difficulty determined for example by the nature of the topic, the number and nature of sources used, and the writing conventions required.

Next, there is also a link between reading process and academic writing. This is seen in the 'knowledge-transfer' model presented by Bereiter and Scardamalia (1987). Figure 2 shows the link between reading and writing in the 'knowledge transfer' model. Academic writing in higher institutions require the writers to include citations and sources in their write-up to back up their ideas. So, when writing academic essays, writers do not go through the 'knowledge telling process'. After looking at the title of the academic essay, the writer begins problem analysis and goal setting. This is the stage where the writer makes plans to begin gathering reading materials. In order to solve this writing 'problem', the writer has to deal with issues pertaining to content and discourse knowledge. Content knowledge deals with details/ideas of the writing assignment. Discourse knowledge deals with the knowledge of the genre of the writing assignment. Once the writer has dealt with content and discourse knowledge problems, he/she is then ready to begin the writing process using the 'knowledge-telling' process. The difference between the knowledge telling when it comes to academic writing is that the memory probes is built from reading materials. So, large portion of academic writing involves reading.

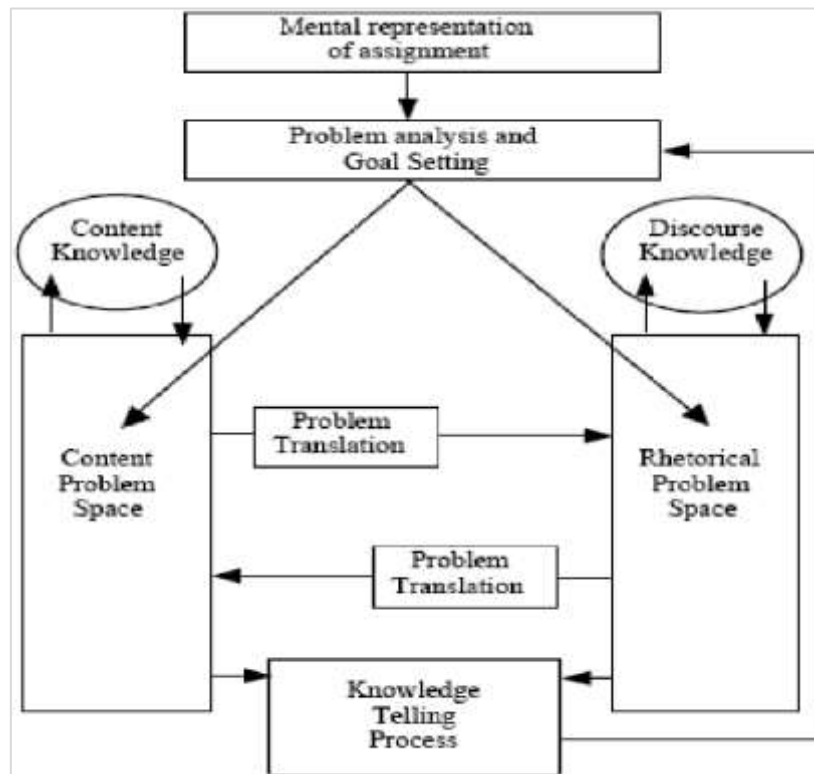


Figure 2: Knowledge Transforming Process
(Source: Bereiter and Scardamalia, 1987)

3.3 Background Knowledge in Reading

In addition to that, reading-to-write process begins with the reading stages on the part of the reader. At this initial stage, the writer is known more as the reader than the writer because no writing begins- only reading activities. To be an effective reader, the reader needs to be equipped with background knowledge. Rumelhart (1982) used the Schema Theory to show the different categories of background knowledge that the reader needs to have. There are three types of schema; (a) linguistic schema, (b) content schema, and (c) formal schema.

(a) The linguistic schema

Linguistic schema refers to the language aspects of the reader. These skills include the reader's vocabulary, grammar, and also genre skills. The skills also include the recognizing writer's sentencing skills, as well as coherence and cohesion in the text.

(b) Content schema

This is related to the content domain of the text. It refers to reader's/writer's knowledge about the topic or subject matter of the target text. Studies show that readers comprehend more of a text if (a) they are familiar with topic from experience; (b) they have read something about the topic before, and (c) they know in advance what reading concerns.

(c) Formal schema

It is knowledge related to the formal, rhetorical organizational structures of different types of texts. Several studies have shown that written texts have a schematic structure and that readers are sensitive to it and use it in processing and recalling the events of stories.

The reading-to-write process requires the writer to spend a large part of his/her writing process by reading. The writer may have compiled/read many reading materials; however, a good writer uses the information from reading as his/her schema or background knowledge to be stored for the writing process. According to An (2013), the written text does not carry meaning in itself. Rather, a text only provides directions for readers as to how they should retrieve or construct meaning from their own previously acquired knowledge. Reading-to-write becomes even more difficult because there are different levels of comprehension. According to Gauthier (1982), there are three levels of comprehension. The three levels are (a) the literal level, (b) the inferential level, and (c) the critical level.

(a) The Literal Level

This is a very important level of understanding because it provides the foundation for more advanced comprehension. It focuses on reading the passages, hearing the words or viewing the images. It involves identifying the important and essential information.

(b) The Inferential Level

It involves determining what the text means. Determining inferential meaning requires you to think about the text and draw a conclusion. , the focus shifts to reading between the lines, looking at what is implied by the material under study.

(c) The Critical Level

This is the level where the reader analyses or synthesizes information and applies it to other information. Understandings at the literal and interpretive levels are combined, reorganized and restructured at the critical level to express opinions, draw new insights and develop fresh ideas.

3.4 Past Research

There is a strong relationship between reading and academic writing. The study by Atayeva, Kassymova, Setyo, & Kosbay (2019) explored how students' reading skills affect students' academic writing. Fifty-two master students of English Language Education at Universitas Ahmad Dahlan in Yogyakarta, Indonesia were involved in this correlational study. Two questionnaires were used as instruments to obtain the data, i.e., the reading habit survey and the academic writing skill survey. The data were analyzed with descriptive statistics and single linear regression tests along with the prerequisite test of normality. The results revealed that the reading habit and writing skills of the students were at the medium level. Meanwhile, the other result showed that the reading habit had a profound effect on college students' academic writing skill shown by the p-value of T-test = 0.000 and F score = 352,524 at the significant $0,000 \leq 0,05$. In other words, reading habit has a significant influence on college students' academic writing skill.

Next, a study was conducted to explore the extent to which the reading-to-write is related to reading and writing abilities. The study by Delaney (2008) included an analysis of (a) test tasks, (b) the relationship of test task scores and scores on reading and writing measures, and (c) the effects of proficiency level and educational level on reading-to-write performance. A sample of 139 participants performed two reading-to-write tasks da summary and a response essay based on the same source text. Results indicate that

the test tasks were different dimensions of the reading-to-write ability, and that the reading-to-write ability seems to be a unique construct weakly associated with reading for comprehension and disassociated from writing an essay without background reading support. In addition, it was found that language proficiency and educational level had a modest effect on the performance of the tasks.

Another study looked into reading-to-write ability of ESL learners through paraphrasing. The act of paraphrasing is the writer transferring reading materials into his/her written assignment. Na & Mai (2017) explored the paraphrasing ability of EFL learners at a tertiary institution in Vietnam and examined the challenges they face when paraphrasing.

Data were collected from ten second-year English major students through (i) paraphrasing a given text and (ii) individual interviews. The findings revealed that participants frequently paraphrased using synonyms, but rarely changed syntactic structures. The interviews showed that the learners encountered several language-related difficulties when attempting to paraphrase, such as adequate understanding of the source text and the lack of vocabulary to use when paraphrasing

3.5 Theoretical Framework of the Study

Using the basic model of Knowledge Transfer (Bereiter and Scardamalia, 1987) to depict the 'read-to-write' journey of a writer, the theoretical framework thus explains the reading journey of a writer. At the beginning of the writing process in the 'knowledge-transfer' model, the writer behaves more like a reader than a writer. The writing journey begins with the reader/writer analysing the problem (Problem Analysis). In order to prepare more reading, the reader/writer need to be equipped with Content Knowledge and this knowledge is enhanced with appropriate schema (Schema Theory Rumelhart, 1982). Next, the reader/writer uses his/her Discourse Knowledge and this is done using the three levels of Comprehension (Gauthier, 1982). The read-to-write process ends right before the reader/writer writes and this is the stage where the reader/writer began the writing process by ensuring that the data undergoes levels of critical thinking probes (Problem Translation).

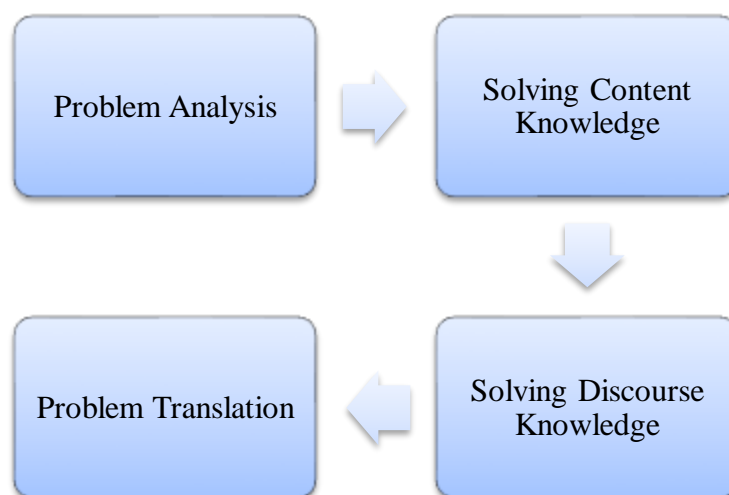


Figure 3: Theoretical Framework of the Study (Read-to-Write)

3.5.1 Problem Analysis

Based on Bereiter and Scardamalia's (1987) problem in the early stages of writing, the writer began by assessing the difficulties they would face in the whole read-to-write process. Difficulties include the writer's reading experience and preparations for writing.

3.5.2 Solving Content Knowledge

In order for the readers to deal with content knowledge, they need to have their own schema. According to Rumelhart (1980), the schema theory presents three types of schemas. Firstly, linguistic schema refers to the language aspects of the written text. Next, content schema refers to the background knowledge that the reader needs to have pertaining to the subject matter of the text. Finally, formal schema refers to the rhetorical structures of the text.

3.5.3 Solving Discourse Knowledge

For effective reading, the reader needs to have discourse knowledge. According to Gaultier (1982), there are three levels of comprehension. The first level is (a) literal level, the second level is (b) inferential level, and the third level is (c) critical level.

3.5.4 Problem Translation

Good writers would make informed choices before they include details into their writing. Problem translation is done when the writer probes into the ideas, details, data, argument before he/she began writing.

4. Methodology

176 undergraduates were randomly chosen from students who attended an academic writing course in a public university in Malaysia. They responded to a survey containing 34 items from 5 point Likert scale. The instrument is a survey with 4 main sections; (a) demographic profile, (b) Problem Analysis, (c) Content Knowledge, (d) Discourse Knowledge, and (e) Problem Translation. With reference to Table 1, the reliability statistics revealed Cronbach alpha of 0.742, thus showing that the instrument is reliability.

Table 1: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.742	.848	43

5. Results and Discussion

5.1 Introduction

The discussion findings are presented based on the research questions;

- 1) How do writers display problem analysis during read-to write process?
- 2) How do writers solve problems with content knowledge during read-to write process?
- 3) How do writers solve problems with discourse knowledge during read-to-write process?
- 4) How do writers perceive problem translation during read-to write process?

5.2 Problem Analysis

This section presents the answer to research question 1: How do writers display problem analysis during read-to write process? According to Bereiter and Scardamalia (1987), the first thing an academic writer attends to is to analyse the problems related to the writing process and for the writer the first few stages would be reading of materials.

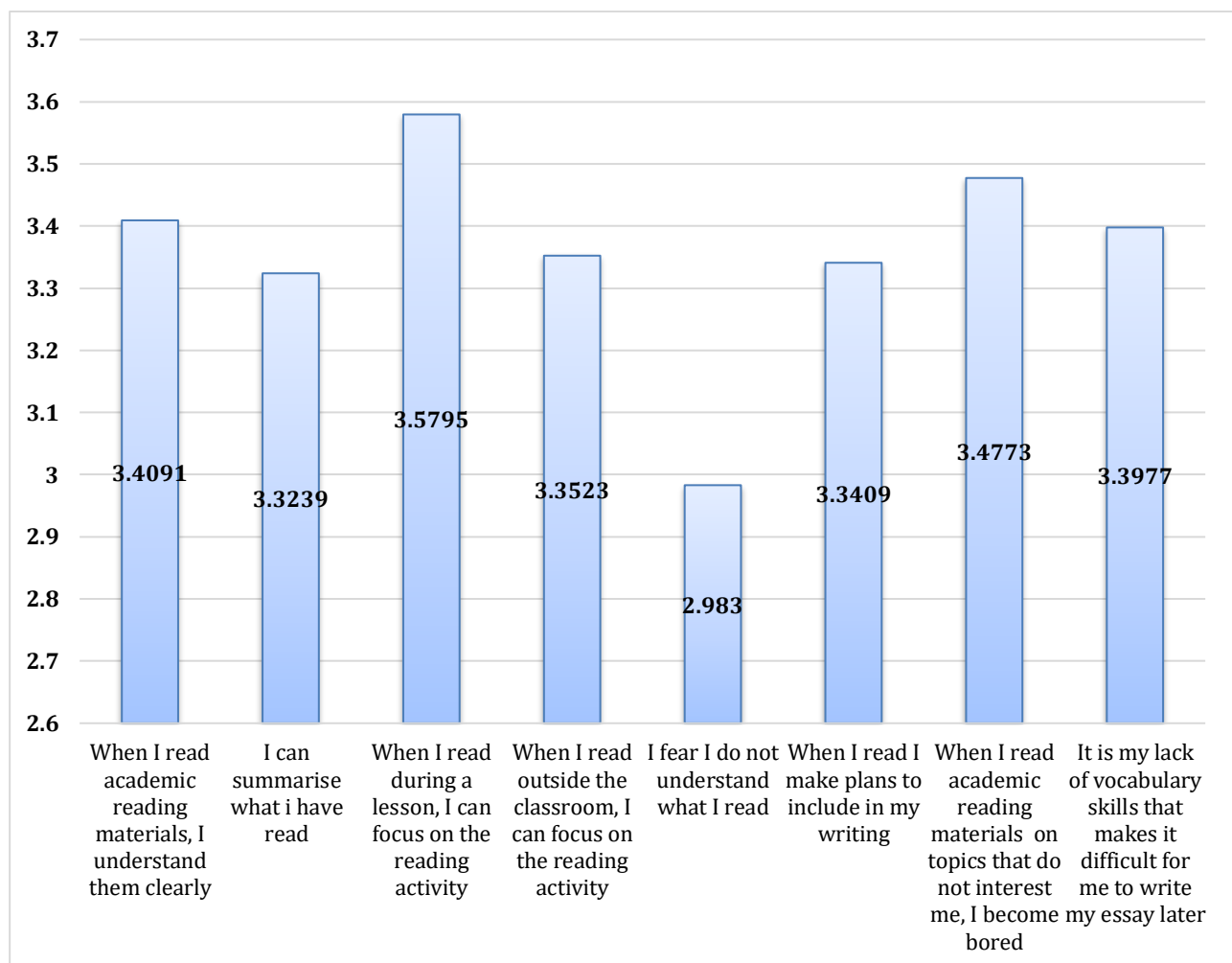


Figure 4: Mean for Problem Analysis

Figure 4 reports the findings for problem analysis. Respondents felt that they had to begin by “understanding the reading materials” (3.4091) . In addition to that readers preferred to read only materials they are interested (3.4773). Readers also blamed their “lack of vocabulary skills” (3.3977) when they faced difficulty in their writing later. What

is interesting, learners preferred to do their reading in the comfort of the classroom (3.5795).

5.3 Content Knowledge

This section answers research question 2: How do writers solve problems with content knowledge during read-to write process? Based on knowledge-transfer process by Bereiter and Scardamalia (1987), content knowledge refers to the background information that the reader needs to have to maximise understanding of the reading material. Background knowledge is referred to as the schema by Rumelhart (1980) and schema is categorised as either linguistic, content or formal schema.

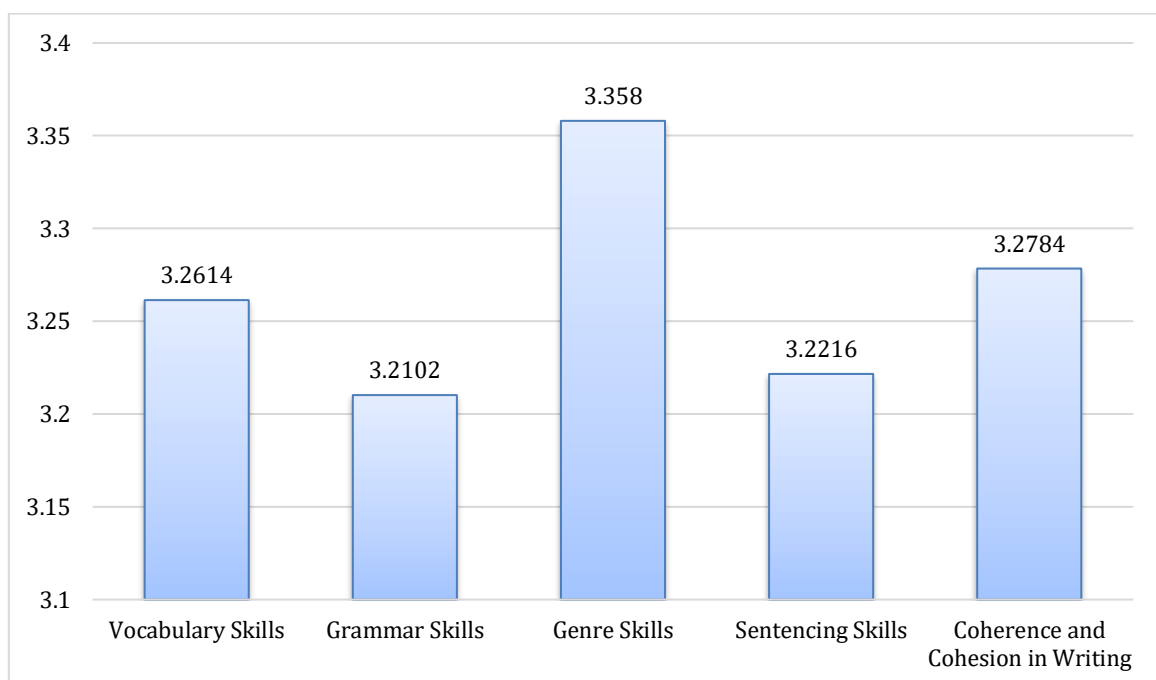


Figure 5: Mean for Linguistic Schema

Figure 5 shows the mean for linguistic schema. Readers must already possess skills such as genre of the text (3.358), vocabulary (3.2614) as well as grammar (3.2102) in order to maximise his/her understanding of the material he/she is reading.

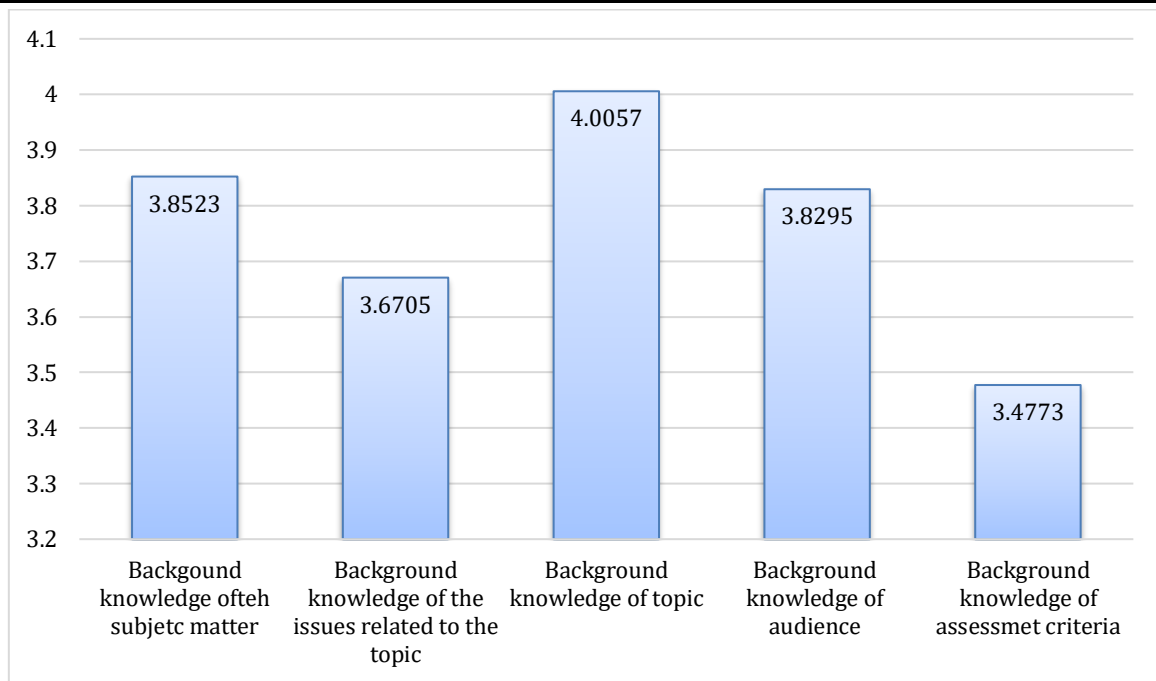


Figure 6: Mean for Content Schema

According to Rumelhart (1980), content schema refers to the background information required by the reader before he/she can make sense of what he/she is reading. Figure 6 presents the mean score for responses for content schema. Readers need to have the background of the topic (4.0057), as well as issues related to the topic (3.6705).

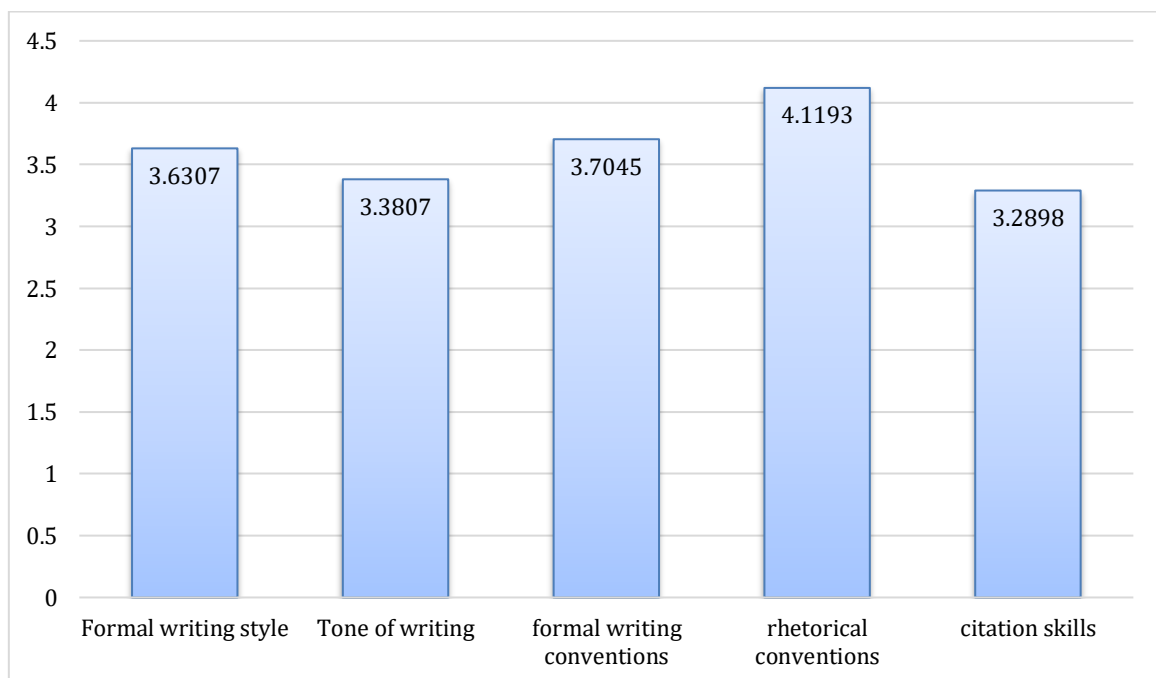


Figure 7: Mean for Formal Schema

According to Rumelhart (1980), formal schema refers to the knowledge of the ways in which the genres of the text is presented. Figure 7 presents the mean for formal schema.

Readers felt that they need to know the rhetorical conventions (4.1193) in order to maximise understanding of the material.

5.4 Discourse Knowledge

This section presents answer to research question 3: How do writers solve problems with discourse knowledge during read-to-write process? Readers are at three levels of comprehension when they read materials to prepare for their academic writing. According to Gaultiher (1982), the three comprehension levels are (a) literal level, (b) inferential level, and (c) critical level.

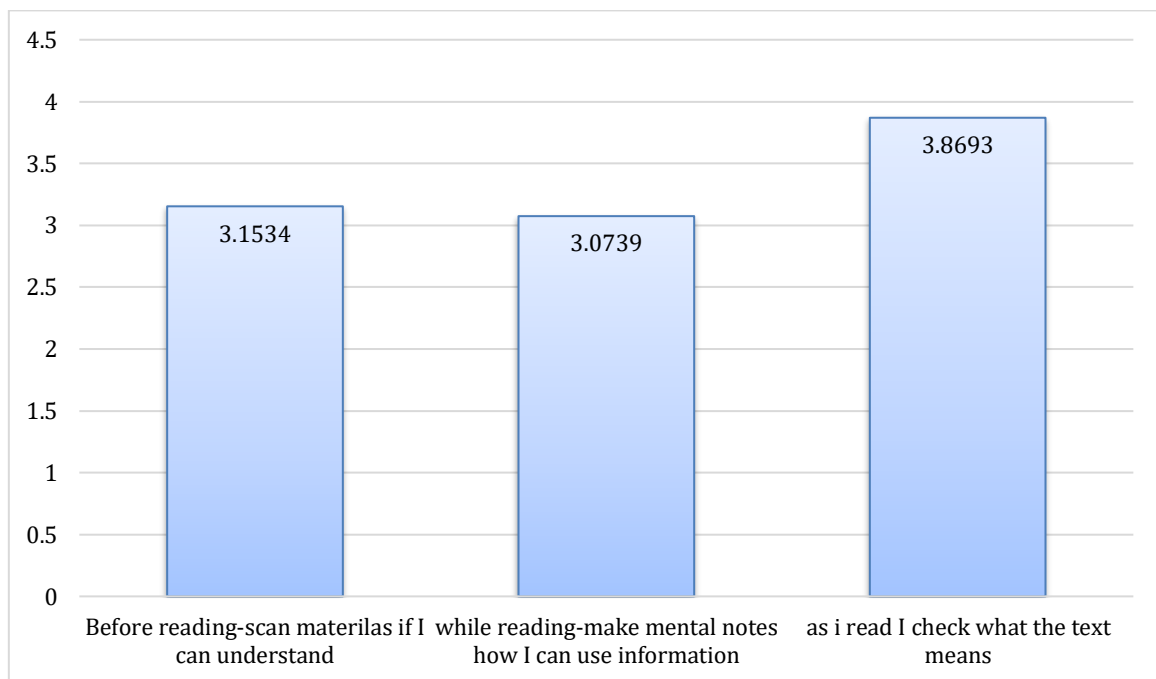


Figure 8: Mean for Literal Level

Figure 8 reveals. The mean for literal level. Interestingly, respondents constantly “checks what the text means” (3.8693). They also felt the need to “scan the material” (3.1534) before they began reading.

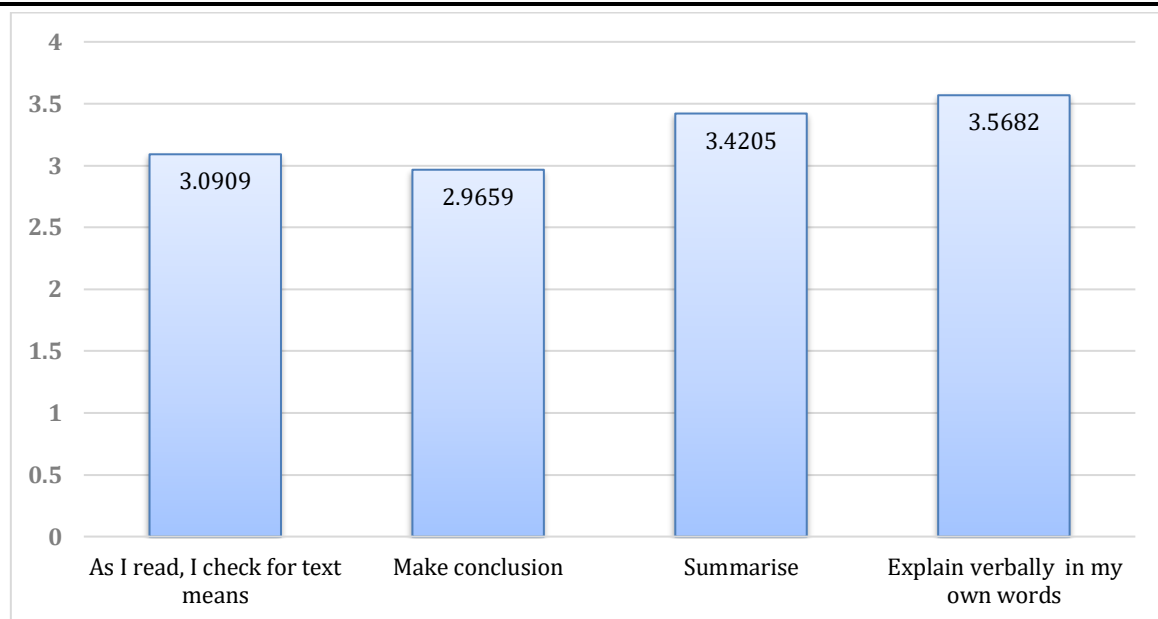


Figure 9: Inferential level

Figure 9 presents the findings for inferential level. During reading, respondents reported to “summarise” (3.4205) and “explain verbally in his/her own words” (3.5682”.

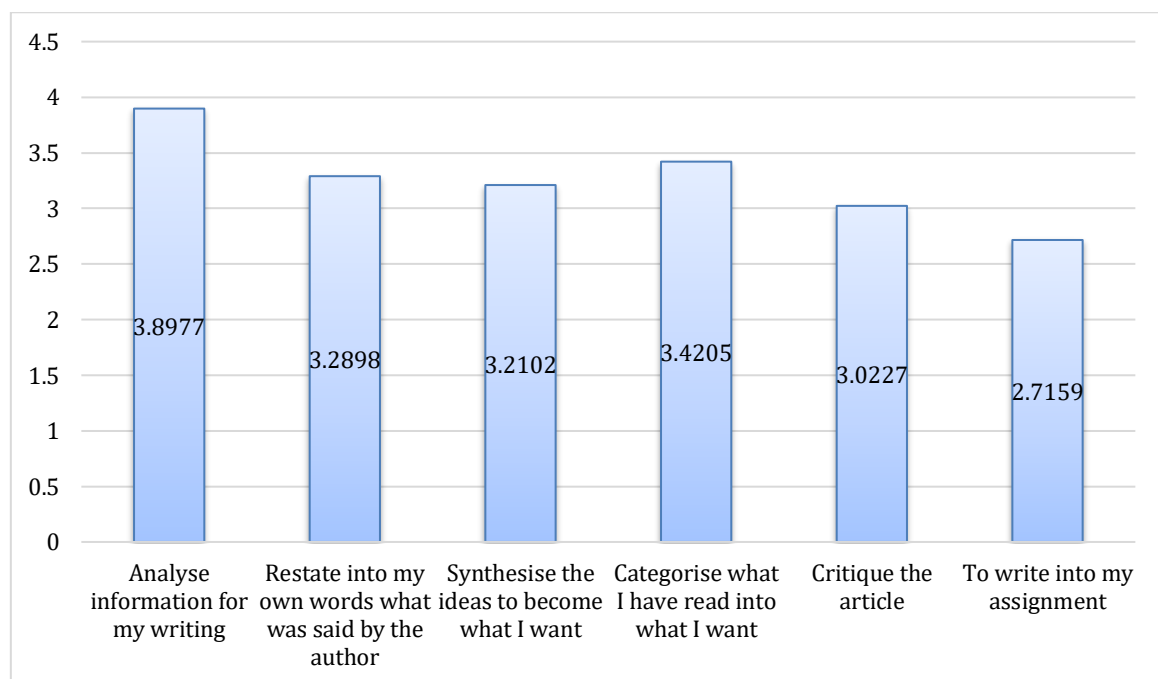


Figure 10: Critical level

Figure 10 reveals the mean score for critical level. Readers felt that they could “analyse information for his/her writing” (3.8977), and “categorise what they have read into what they” (3.4205) needed to be used in their writing.

5.5 Problem Translation

This section presents findings to answer research question 4: How do writers perceive problem translation during read-to write process? According to Bereiter and Scardamalia (1987), problem translation refers the ability of the writer to identify actions to solve his/her problems pertaining to writing. This stage also depends on the ability of the reader/writer to think critically before adding information into their writing.

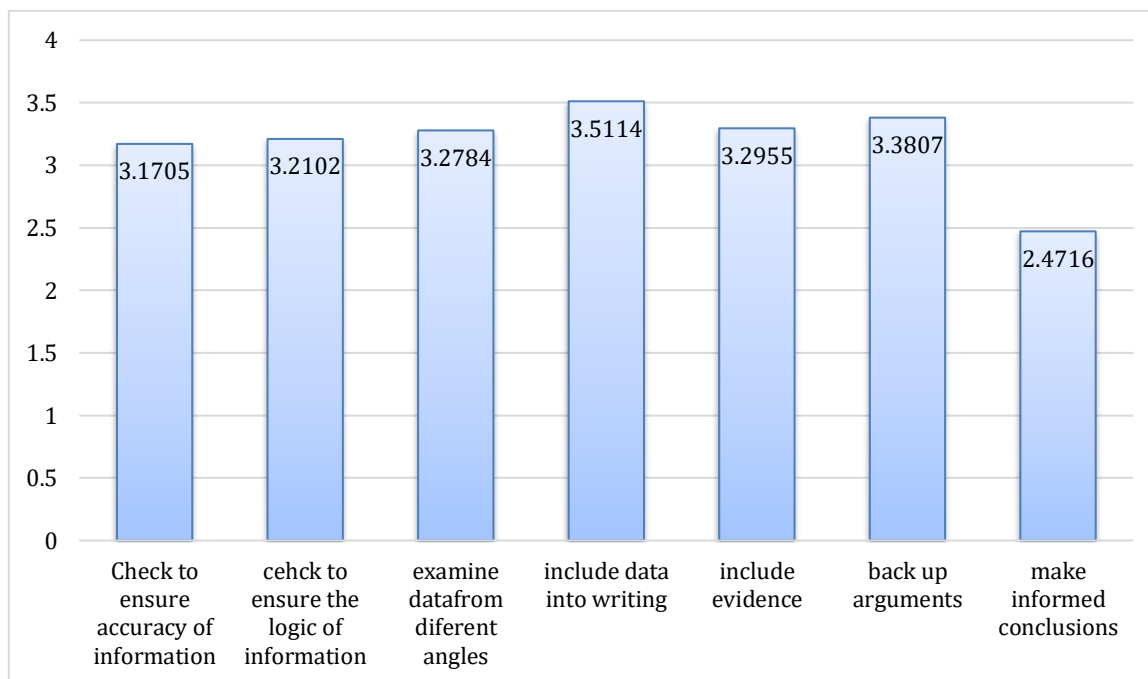


Figure 11: Problem Translation

Figure 11 presents the mean for problem translation. Writers felt that they needed to “include data into their writing” (3.5114) and also to “back up their arguments” (3.807).

6. Conclusion

Only within the scope of this study, it was found that writers made plans for their writing beginning with what they wanted to get out of their reading materials. According to Bereiter and Scardamalia (1987), the knowledge transforming model reveals the path taken by writers in order to write academic essays. The path in knowledge transforming begins with problem analysis. This study revealed that during the problem analysis stage, writers used their reading skills to look for and make sense of reading materials suitable for writing. Once the reader has established plans to look for materials, he/she will use reading skills to solve problems pertaining to content and discourse knowledge.

Readers need to have content knowledge when they read materials to prepare for their writing assignment. Their understanding is further facilitated when they use their stored schema. This schema is categorised as linguistic, content and formal schema by Rumelhart (1980). Findings in this study revealed that readers were aware that their vocabulary and genre skills are important to maximise their understanding. The study

by Atayeva, et al. (2019) found that language skills needed for reading is related to writing skills of writer. Apart from content knowledge, readers also used their discourse knowledge to comprehending the reading materials. They understand the materials at literal, inferential or critical level. The findings in this study revealed that readers depended on their background of the topic and issues related to the topic to help in their comprehension.

The teaching of writing is taught together with reading skills. The teaching of academic writing needs to first focus on academic reading skills, skills of summarising as well as skills of paraphrasing. Bereiter and Scardamalia (1987) mentioned that a portion of the time spent by writers is planning what (content knowledge) they need to write and how (discourse knowledge) they planned to write. In order to use the best possible information and data for writing, the writer needs to read suitable materials to be included in the essay.

This study looked at what reader/ writers perceived as needed/suitable for them as readers and writers. It is suggested that future researchers looked into what writers think of when they took the role of reader before they wrote and when they thought of when they took the role of writers using the reading materials they have chosen. This can be done through think aloud protocol. The qualitative data can be analysed both qualitatively and quantitatively to reveal interesting behaviour of the readers and writers of academic essays.

About the Author

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