

PARAMETERS OF WRITING RESEARCH PAPERS BY MULTIPLE AUTHORS: WHO WRITES WHAT TO WHOM?

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ABSTRACT

This study investigated the writing parameters of a research paper by multiple authors who formed a research team in a public university in Malaysia. Drafts of the research paper were produced through the research activities and writings of the participant researchers. By observations, interviews, and textual analysis of drafts, we studied the three main parameters that each written text naturally contains: who wrote the text, what the text was, and to whom the text was written. Participants in the present study comprised a team of researchers from different disciplines. They conducted a project in science, wrote, and published their findings in an on-line journal. The findings indicate that the authentic task of writing a multi-authored research paper by a team of experienced researchers is beyond and more complicated than fulfilling a basic task of writing in the context of a class by a novice student. The experiences through which the participant researchers of this study produced the drafts of the article are greatly valuable for the academics who are planning to publish their findings in the form of an article. This study has implications for teaching of writing academic texts, particularly writing of research papers.

Keywords: *writing, publishing, research article, multiple authors*

INTRODUCTION

Written text is a medium of communication and a channel of relation between at least two individuals, the author who produces the text by writing and the receptor who receives the text through reading. The interaction in this type of communication is naturally both “interpersonal” and “intrapersonal”. The writer learns through writing and producing the text. He learns through discovering the meaning (intrapersonal) and later sharing the meaning with others (interpersonal). The product of this mainly private act is the text that becomes public at the end (Gere, 1985; Murray, 1999; Samuel, 2005, p. 93). The terms “composing process” and “writing process” have been used interchangeably in the literature. Zamel (1982) knows writing as a process that helps the meaning to be constructed. To Flower and Hayes (1981), in the process of writing “as we write” knowledge is constructed and developed too.

A written text has three main elements which describe the processes through which the text is produced. The answer to the basic question of “*Who* writes *what* to *whom*?” defines the three fundamental elements in production of texts. These crucial elements are comprehensively defined in the “Theory and Practice of Writing” by Grabe and Kaplan (1996) who introduced the model of parameters involved in writing (p.215). Here we briefly introduce the key parameters of writing in order to base our discussion on these three elements.

The *who* parameter defines the author or writer of the text, his intentions and purposes for the composition of text, and the amount of expertise and background knowledge he has in the subject he is writing on. “*Who*” element determines if the author is a beginner or an experienced writer who is also aware of his audience.

The “*What*” parameter refers to the content, types and genres, and topic of the written text. “*What*” is also the joint, the link between the writer and the reader, or more technically, the author and the audience. On one hand *what* defines *who* that produced the text and on the other hand it describes *to whom* the text is written.

To *whom* a text is written defines the audience, the intended or expected reader, who reads the generated meanings. Audience is essential in writing as it guides the writer (the *who*) to create the text (the *what*) for that specific reader.

Depending on the text, the author *who* writes the text should possess some characteristics including variety of skills. Author knows *what* the text must contain and how it can be shaped. Most importantly, *to whom* the text is written clarifies the audience's qualities and expectations from the content of the produced text.

Background

Like any other text, research article (RA) also comprises the three main parameters in writing. RA is an academic text that serves a unique genre and has been studied for decades. Swales (1990) believed that "like all living genres, the RA is continually evolving" (p. 110). Writing a research article is a task of producing an academic text which is the result of a process called researching. It requires expertise, endurance, and variety of skills to report the findings from a researching process to the peers in the field and, more broadly, to the international audience who is seeking brand new findings.

Although research on writing is replete with the studies looking at the process of writing various texts, many of them unexpectedly equalize writing process and the physical act of composing the text. These two may sound the same in the first glance, but they are different in practice. Generally, literature on writing process has focused on composing process, the physical act of writing (or typing) the text. Not all writing process is equal to composing process while composing process must necessarily be included within the writing process. Badley (2009) asserts that research article writing is incorrectly viewed as *writing up* the text. He also claims that researching process is not separated from writing process.

For producing a research article, writing process is a process within researching process. They occur simultaneously, *shape*, and *re-shape* each other. Another study even has gone further from the actual meaning of writing process. Cameron, Nairn, and Higgins (2009) state that writing only has three aspects, "emotions, know-how, and identity". They believe that it

would be sufficient to fully understand the writing process if the students get to know these three aspects. They also suggested that by knowing these three aspects novice writers would be able to master academic writing.

Conducting the authentic task of writing a research article is different from, and more complicated than, fulfilling a writing task of a course work. Also, its authenticity is not against being joyful. Even writing RA can be a delightful task (Badley, 2009) if the writing is considered as a creative process in which the writers uses their creativity. In the current literature of RA writing, the separation of research process from writing process is obviously an existing gap.

A good example for this gap in the theory of RA writing process, or even in misunderstanding this process, can be seen in Li's (2007) study where she says: "after [my participant student] Yuan had completed his laboratory research, [she started writing of the article]" (P.60). This reveals that for Li, the research process and the writing process were two distinct processes. Li was involved with the process of composing the RA text by providing some sources for the participant student to write the "Results and Discussion" section. The student could choose any writing style and the whole writing process, and the text, could be different if he did not receive any advice or help from Li (the researcher). Li (2007) also mentioned that the "process of writing an article is a continuous process of argumentation" (p.68). But she mentioned this when her participant student was in the process of writing the RA; and to them the research process was over by then.

Although writing process and research process seem to be two different processes, we should bear in mind that the writing process of a research article is a unique process, in continuous interaction with other processes in the researching process. In other words, the process of writing a RA is within the researching process; it is neither a separate process nor it begins after researching is completed. Hence, for the present study we viewed the text as a product of a writing process which was one of the sub-processes of a researching process. Therefore, we focused on the influences and the reflections of the researching process on the drafts of the article produced by multiple authors from different disciplines.

STATEMENT OF PROBLEM

Current studies on writing and publishing research articles are mostly process-oriented and mainly look at single-authored papers (e.g. Burrough-Boenisch, 2003; Li & Flowerdew, 2007). In spite of a global increase in amount of multidisciplinary and multi-authored RAs among variety of disciplines (Brown, Chan, & Chen, 2011; Yarcheski, Mahon, & Yarcheski, 2012), multi-authored articles are mainly considered for ethical issues such as allocation of contributions, authors' name order (Brown et al., 2011; Floyd, Schroeder, & Finn, 1994), authorial identity or authority (Hyland, 2001; Hyland & Tse, 2012), and unfairness of authorship (Welfare & Sackett, 2011).

Now, authorship is even more complex since multiple authors of one text are located in different places (on global map) using numerous forms of communication through wikis, emails, blogs, live-chat, and as such in order to discuss or even conduct research (Kuteeva, 2011; Leuf & Cunningham, 2001; Li & Flowerdew, 2007; Liu, 2011; Lund, 2008; Zutshi, McDonald, & Kalejs, 2012). Using contemporary technologies has extensively facilitated processes of writing and publication. On the other hand, the new forms of communication have added huge complexity to production of multi-authored texts. The present study is a naturalistic enquiry in following multiple authors almost in all stages of research in order to unveil complexities of production of a multi-authored research paper.

The Study

This manuscript reports on part of a bigger enquiry on the writing and publishing processes of a research paper by multiple authors. All nine drafts of a research article, written by a team of researchers during five months in a leading university in Malaysia, were collected and analyzed for studying the three fundamental parameters of writing, namely *who* (writer), *what* (text), and *to whom* (audience/reader). There were three sub-teams within the research team. The participant researchers were from engineering, chemistry, and physics. Each sub-team had the responsibility to produce drafts related to their own expertise and research activities. The present study was an effort to answer the following questions according to the findings from the nine collected drafts of the article:

1. How is “*who*” parameter of writing defined in the multidisciplinary research team?
2. How does the text of article reflect the “*what*” parameter of writing?
3. *To whom* was the article written to and how this audience defined the writing process of research article text?

METHOD

Generally, the method which was followed for data collection and data analysis in the present study was slightly similar to the approach by Li (2006). In order to capture the flow of the whole work Li collected the process logs of her only one participant, a PhD student. All researching process involved this student’s first effort in production of his first draft of an article. Different drafts of the article written by participant student were also collected. Other sources of data were interviews, emails, submission processes, editorial processes, and several informants. But a team of expert researchers, with a background of having several published papers and/or books, and a PhD student under the supervision of one of the authors comprised the participants of the present study.

For this study our approach in data collection and data analysis was based on a naturalistic enquiry and a case study of a multidisciplinary team of eight researchers from chemistry, physics, and engineering. During five months in which the participant research team were conducting their project, we collected nine drafts of the article which they produced in different stages of their research project. The progression process of drafts from draft zero (D_0) to draft eight (D_8) were analyzed in order to see what processes made the draft produced by the participant researchers. Since we always tried to be at the heart of events, we observed almost all processes of laboratory activities and discussions in which the research team was involved. Mainly retrospective, interviews helped us confirm our findings from the observations of research activities in the laboratories and better understand the unclear, and mostly technical, matters within the drafts of the article.

Benefitting from observations, interviews, and documents, we collected the data. After the data was collected from different sources, the

themes which emerged from the data were categorized and we analyzed them accordingly. The preliminary findings also guided us in conducting the rest of our study. Therefore, the initial stages of data collection both led us to conduct the research in a more accurate fashion and later helped us in analysis of findings.

Parameters Involved in Writing

The framework which was used in the present study for analyzing the collected data was the model of parameters involved in writing proposed by Grabe & Kaplan in the “Theory & Practice of Writing” (1996). In chapter eight of their book, titled “Towards a theory of writing”, Grabe and Kaplan (1996, p. 202) asserted that they tried to answer the fundamental question of *what is writing?* Later, they explained that the question would be answered through an ethnographic approach towards writing. Eight parameters involved in writing were discussed in the book to answer this holistic question which was raised by Cooper (1979, cited in Grabe & Kaplan, 1996, p. 203):

Who writes what to whom, for what purpose, why, when, where, and how?

The proposed parameters are *who, what, to whom, for what purpose, why, when, where, and how*. Even though Grabe and Kaplan called this ethnography of writing a “tentative” (1996, p.214) model of parameters involved in writing, it is undeniable that three of the parameters are the most essential aspects in writing which cannot be ignored or erased from any writing situation or written discourse. We summarize the three parameters in one question here which involves the writer, text, and the reader:

Who writes what to whom?

To discuss the “*who*” parameter, Grabe and Kaplan (1996, pp. 203-204) first tried to classify the types of writers. They raised the issues related to the writer’s experience, range of writing expertise, and purpose of writing. They believed that a novice writer’s writing is different from “a mature experienced writer”. Also it is important that some writers write in a variety of ranges while others may only write in a few limited fields.

An interesting issue, mentioned by Grabe and Kaplan, was the purpose of the writer for writing. One writer may be a student who seeks academic prestige through writing, whereas the other is a professional journalist for whom writing is a source of income. Therefore, the way they look at writing depends on the reason they write for. “*Who writes*” represents the writer and all other parameters related to him/her as producer of the text, such as writing process, writing situation, culture, and so on.

The “*What*” refers to types of writing, the writer’s background knowledge, and the content. Types of writing are related to different genres and registers. Genres include the properties, purposes, and the structure while register highlights the topics around which the text is written. The writer’s background knowledge, somehow, mirrors the writer’s cultural context. “*What*” parameter can be considered as the center for the act of writing; text is the communication channel for the writer and reader. Different genres, modes of written text, purpose of the text, and the length of the text are some aspects of the writing product.

Audience is the “*to whom*” parameter involved in writing. The produced text and the meaning which is generated within the text essentially need an audience. The text is intended for the reader to read it. Therefore the reader’s characteristics such as their quantity, shared knowledge with the writer, and closeness to the writer are the important factors that form the audience of a written text. “*To whom*” is the reason that a writer produces a text; the reader who plays the role of audience in the written discourse. The readers’ characteristics, including their background knowledge, is very significant for the writer who attempts to convey a shared meaning.

In the following sections of this manuscript we tried to briefly answer the questions raised in the present study. Three focal examples from our findings are selected and elaborately discussed. These examples helped us exhibit the manifestation of the three main parameters involved in writing of a multi-authored research paper.

Example of *Who*

According to the model of parameters involved in writing the writer of a RA text must possess some unique characteristics and knowledge related

to the produced text. Different writers have different characteristics. “This difference in the characteristics of the writer will be quite independent of other influences (e.g. audience) which impact the writing situation- and it is not simply a general proficiency issue” (Grabe & Kaplan, 2014, p.204). Here we give an example from the difference in characteristics of two authors in the participant research team.

Dr Jane, from chemistry department, who was the corresponding author of the multi-authored paper, received a feedback from a journal to which she had submitted their paper for publication. The journal’s reviewer noticed that the writing conventions required by the journal were not properly met in one of the sections of the article. Then, Dr Jane recognized that the section was written by the head of engineering sub-team, Prof Zarri, and the section reported on the findings from the experiments conducted in the engineering laboratory, called Voltammetry.

During writing and publishing process, there were times that the multiple authors had to consider the “publication criteria” of the target journals in order to make sure that their article would be “publishable” (as Dr Jane stated). For instance, the way Prof Zarri (head of engineers) reported the Voltammetry procedure was not satisfactory to the principal author. Hence, Dr Jane stated:

...because the way voltammograms are interpreted [in the text] is not accepted by the journal, I asked Prof [Zarri] to look at some papers in the Journal. ...they are good samples for the accepted papers [’criteria]. (From interview with Dr Jane).

Later Dr Jane sent some articles, published in the Journal, to Prof Zarri in order for Prof Zarri to have a better vision of the Journal’s acceptance criteria for “interpretation of voltammograms” within the research article text. Following that, Prof Zarri re-wrote the Voltammetry section and re-sent to Dr Jane, the principal author. This shaping and re-shaping of the text was an inseparable part of the writing process and took place many times during production of several drafts of the multidisciplinary research article by its multiple authors.

Prof Zarri had published many articles before and she was aware of the accepted genre in writing science research articles, but she seemed not to be fully aware of the “interactional patterns” (Duff, 2010) within a specific genre, required by the Journal. This finding highlights that not only the genre knowledge is crucial for writers of research articles, they also need to master the knowledge of layers of genres within a specific genre in order to produce “publishable” papers. This finding also explains how a writer’s the characteristics defines what he or she writes.

Example of *What*

In defining *what*, there are three elements that determine the produced texts (Grabe & Kaplan, 1996, p.205). Content, which is directly related to the background knowledge of the writer and reader. Genre, is the second element which refers to types of texts written for different purposes, has unique properties, and possesses a defined structure. Register is another characteristic of text that specifically defines the topic around which the text is written, and the writer-reader or author-receptor relations.

A very interesting finding of the present study was from *what* was produced by the participant researchers. Each researcher in the team produced separate segments of the RA text and lastly all those segments were assembled together to produce the final draft of the article for publication. Multimodality of academic texts is the result of today’s increasing speed in creation of different mediums for communication. For instance, participant researchers of the present study produced several modes of text resulted from their laboratory activities, discussions, and writings. The multimodal text was enriched by words, as plain text, tables, graphs, drawings, and images. Figure 1 contains segments of the multimodal text produced by the multiple authors of the RA.

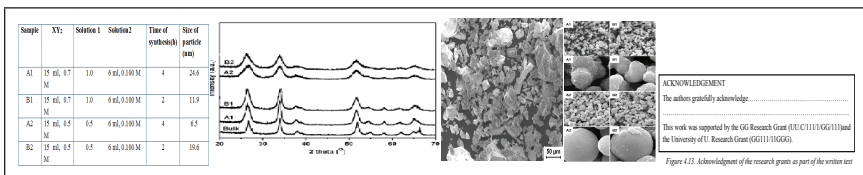


Figure 1: Multimodal text produced by multiple authors for the RA text

The multimodal text was produced because of the content knowledge that the multiple authors had, their genre-awareness, and their expertise regarding the accepted registers in their field.

Example of *to Whom*

The audience or *to whom a text is written* determines the generation of meaning and the text being created. Knowledge about the intended readers and their expectations from the reading of a specific text describes that this parameter in writing is an inseparable part of the writing process. For our participant researchers in this study it was quite clear from the very beginning that *to whom* they were going to write their research paper.

The principal author, Dr Jane, was responsible for targeting a suitable journal and she had to make sure that their research paper met all the requirements set by the journal authorities and in a bigger scale the conventions set by the scholars in their field. Here we bring only one example which clarifies the audience-awareness of the multiple authors in the team.

An interesting finding was that the details for distilled water were not given by the authors. There were several cases that during our observations of research activities of the participant researchers they used distilled water for their experiments. We were expecting to see that the multiple authors mention “distilled water” in the “*Material used*” section of their paper as one of the materials or chemicals used for the experiments. But, to our surprise, distilled water was never mentioned in the final draft of the RA text. Later, we asked Dr. Jane about the reason, she explained that:

...distilled water is something which can always be found in our libraries. It is provided by university and ... [distilled water has] no certain effect on the experiments. We [only] use it for cleaning purposes. All experts in our field [are] already familiar with the procedure...(from an interview with Dr Jane).

This finding also shed light on the “careful consideration of the audience” (Grabe and Kaplan, 1996, p. 264) in production of the text. The multiple authors of the science RA were confident that their audience, by default, had the knowledge about the details of distilled water used in the

experiments. Hence they did not provide more details in the text regarding the use of distilled water. *To whom* the text was written determined *what* was written by the authors.

DISCUSSION

In the writing of the multidisciplinary multi-authored research article in science, multiplicity of authors goes beyond doing a simple task of writing (done by a student in a class setting). One of the aspects not specifically considered in the model of “parameters involved in writing” by Grabe and Kaplan (1996) is the multiplicity of the authors. In this model the writer is the individual who has produced the written text. But in the present study in which several researcher-authors from different disciplines were the writers, the composition and structure of the produced text was much different from a single-authored text. So, the answer to “who” produced the text is slightly different from what Grabe and Kaplan have discussed. By adding “multiple” and “s” to the *author*, in the Grabe and Kaplan’s model of parameters involved in writing, we highlighted the essentiality of considering multiple *authors*’ roles in producing the multi-authored RA text. Figure 2 displays the contribution of the present study to the theory.

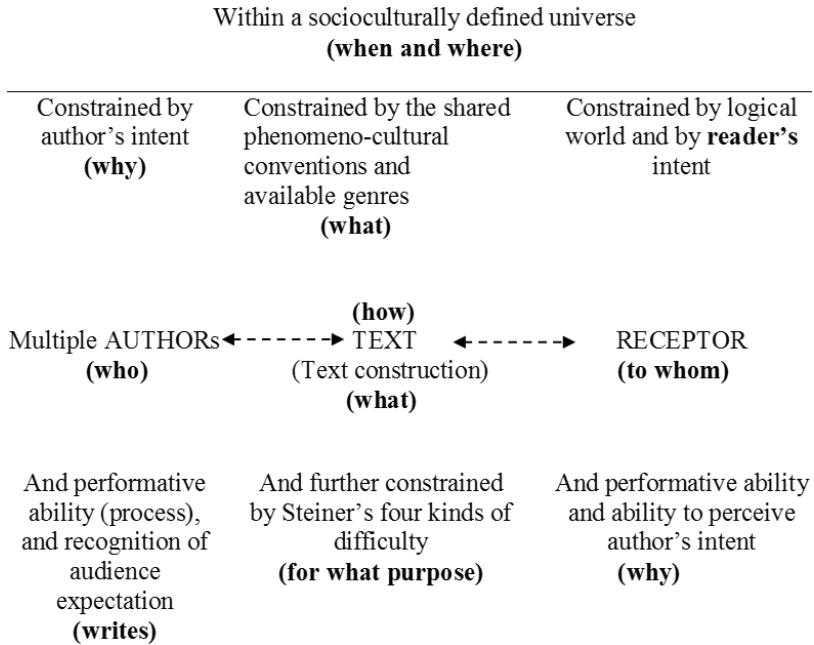


Figure 2: From parameters involved in writing by Grabe & Kaplan, 1996, p.215

The model becomes, somewhat, more developed if the multiplicity of authors are considered as well. Apart from having different cognitive characteristics, multiple authors in the present study were from different disciplines, thus their writing style and standards were also different from each other.

Today the concepts of “multi-authored” text and “multi-sited” research have gone beyond their original definition. New communication technologies have made everything possible.

Even people are not only individuals, they are only a click away from millions of others to share their knowledge and ideas as well as being influenced by them. You may conduct a natural interview with your participant today and get an answer. But tomorrow (or even one hour after that) the same person will have a totally different idea or much richer information about the question you previously asked. The source of new information could simply be his smartphone or his blog mates on the internet.

In the model of parameters involved in writing by Grabe and Kaplan (1996) the *when and where* parameters (p.215) imposed the selection of text for submission to the journals. Parts of the text in different drafts were not reflected in the published RA because they were written only for the sake of co-authors to be informed of different phases of research process, project progress, and results from experimental. In the submitted RA for publication and also in the published RA, only the important (necessary) results were reflected for the audience. *When* the text was produced and *where* it was seen by readers determined the content.

CONCLUSION AND SUGGESTIONS

In short, most women in Selangor were at low level of physical activity. However, the result was diverse based on demographic variables. In terms of marital status, single women were categorized at moderate level of PA, different from married and divorced women who were categorized at low level in PA.

In terms of occupation, home maker, self-employed, white-collars and students have participated moderately in physical activity. However, professionals and unemployed women have participated at low level in PA.

In addition, with regards to academic qualification, school leavers and women with certificate were doing exercise moderately. Yet, women with degree holder, and above as well as diploma holders were rarely exercising.

Lastly, women with extra body weight were found to participate at high level of PA. Women with normal body weight have participated in PA moderately, while women with less body weight have participated in PA infrequently.

Besides, findings proved that academic qualification and BMI were associated with PA participation. However, marital status and occupation did not associate with PA participation.

Based on the findings, this study recommended public health authorities and policy makers to develop suitable activities based on

women's demographic profile. Exercise program should also be organized among unemployed women and it should be convenient with their financial capability. In addition, activities for women who worked professionally should match their leisure time and availability of PA. Besides, women with diploma, degree and above are prevalent to work as professional; consequently, exercise program should also apt with their leisure time. Other than that, women regardless of BMI should constantly be encouraged to be active in keeping an ideal body weight to prevent them from getting any other non-communicable diseases.

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