

Rhetorical Structures in Academic Research Writing by Non- Native Writers

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Abstract

Writers of research articles are expected to present research information in a structured manner by following a certain rhetorical patterns determined by the discourse community. Failures to keep to the writing standard and rhetorical pattern are likely to lower the acceptance rate. While producing a research article is understandably a complex task, it is even more difficult if one is writing in his or her second or third language. Even if grammatical mistakes can be ironed out by a language editor, researchers are on their own when it comes to rhetorical presentation of their research ideas. The available research writing guidelines constructed in the native speaker context often fall short in addressing rhetorical aspects related to cultural issues that have been known to influence most non native English (NNE) writings. Motivated by the complexity of rhetorical presentation in research articles and the problems on writing research articles by NNE writers, this paper is aimed to explore the rhetorical moves used by the Malaysian writers in the introduction section of Computer Science research articles for journal publication. CARS model (Swales, 2004) is used to analyze the rhetorical moves in the introduction section of Computer Science research articles by the Malaysian writers. The study begins with a corpus compilation of five research articles (RA) by the writers followed by move analysis use in the CARS model (Swales, 2004) was conducted to analyze the articles. The analysis revealed that majority of the writers adopted most of the rhetorical strategies in Swales model (2004). The paper concludes that CARS model is suitable in identifying the rhetorical moves in the RA by Malaysian writers.

Keywords: Research article, CARS model, Move analysis, Non Native English (NNE) writing

1. Introduction

1.1 Research writing.

Writing skills for academic research writers requires specific writing skills that are different from the regular academic classroom writing (Atkinson, 1996; Connors, 1982). A rhetorical text analysis by Atkinson (1996) on scientific journals in the period of 1675 to 1975 showed that scientific writing has evolved over the decades and are significantly different from the communicative and classroom writings in many ways. The differences in writings for scientific writing purpose became more obvious when publications changed from predominantly narrative such as mystery and science fiction to more professional letters, experimental reports, official documents and theoretical explanation. The writings turned to be less persuasive and more passive in style with steady decrease in usage of first pronoun and longer words. A study on the history of technical writing textbooks and instructions during the period of 1900-1980 (Connors, 1982) found that the inability to write among engineers has already been discussed in engineering journals letter and essays as early as in the 1900s but there were almost no inter departmental cooperation between English and engineering faculties. While the first technical writing textbook entitled *A Guide to Technical writing* by Rickard was published in 1908 followed by others (Connors, 1982), the developments of scientific writing were exclusive for native writers. Both studies by Atkinson (1996) and Connor (1982) concurred that scientific writing skill especially for publication purpose is of episteme nature, where the writing requirements are determined by an intellectual body at a particular time which currently is represented by the board of editors, reviewers and designated audience.

Writing a scientific research article is different from the regular communicative writing (Cargill and O'Connor, 2009).

It is necessary for scientific writers to acquire as part of their professional necessity, the expected writing manner which is more specific and structured compared to communicative English taught during their tertiary level. Research articles manuscript are expected to present a particular information ‘structured according to a certain rhetorical pattern’ (Adnan, 2008 p.121) and the manuscripts that do not keep to this standard are likely to face undesirable reviewer comment or even rejection. Such standard of writing have been deliberated in many books and guidelines (Silva, 2007; Cargill and O'Connor, 2009) however, the tenets of most research article writings guides and models are rooted in the native writer of English (NE) context (Altbach, 1978, Bazerman, 1988, Anthony, 1999).

1.2 Research writing by Non native English (NNE) writers.

English has emerged as the preferred language for global communication (Ommen, 2012; Baskar and Soundiraraj, 2013) and instructors must consider “platforms of teaching English to speakers of other languages” (Omidvar and Sukumar, 2013) rather than simply adopting the textbook intended for Native users which may be lack in ELT methodologies that support foreign and second language consideration (Al-Khairi, 2013). Such convention has drawn many investigations on research article writing by Non Native English (NNE) writers. Such study is much called for especially when previous researches have shown that NNE research articles writers faced many writing problems due to cultural differences (Ahmad, 1997; Kourilova, 1998; Mirahayuni 2010; Vasconcelos 2007). Furthermore these cultural differences are seldom addressed upon in the ideal native model of writing which are commonly used in the conventional teaching and learning. Flowerdew (1999) has warned that if the contribution of the non native writers in the international English publication is to be encouraged, then it is important to conduct research at the micro level, especially in terms of individual linguistic and cultural backgrounds. As such, studies on non native RA writings in relation to variation due to cultural background must go beyond textual description and move into classroom application as done in a few studies (O'Neill, 1997; Ibrahim and Nambiar, 2012, Swales, 2004).

1.3 Research writing by Malaysian academicians.

In Malaysia, the academicians who also play the role as researchers, published research articles for various reasons such as for career advancement (Jusoff, Abdullah and Samah, 2009), for sharing of knowledge, to secure research funding, for prestige, because their research funders require publication (Zakaria and Fytton, 2006; Roosfa and Yahya, 2011) and to meet the performance measures (Rahayu, Norazan, Az'lina, Adriana, Normadiah and Naslina, 2013); however, in reality the quality of the papers is still unsatisfactory (Lim, 1975; 1995; Pang, 1996) and bigger number of publication is needed (Zainab 1997; Zakaria & Fytton, 2006; Jusoff and Samah, 2010, Suryani, Hashima, Yaacob, Salleh and Desa, 2013). Some of the challenges listed are English language barrier (Altbach, 1978; Zainab, 1997), time consuming (Lim, 1992; Zakaria and Fytton, 2006) and cultural issues (Ahmad, 1997; Zainab 1997). The problems listed persisted despite the fact that English is placed and taught as the second language in Malaysia (Suryani, Shafiq, Aminul and Hazry, 2012; Muftah and Rafik-Galea, 2013). In the post industrial countries, technical writers help their scientist to write faster and more effectively thus giving the scientist more time and energy to focus on the research substance and quality (Slattery, 2007); however such constructive technical writer profession in Malaysia is yet to be on hand. To begin with, more understanding on how the Malaysian writers write in comparison to the standard expected would benefit the Malaysian RA writing practice classroom application in terms of prioritizing the writing efforts, devising intervention strategy (Ibrahim and Nambiar, 2012) and justifying why differences occur (Adnan, 2008).

1.4 Rhetoric in research articles writing.

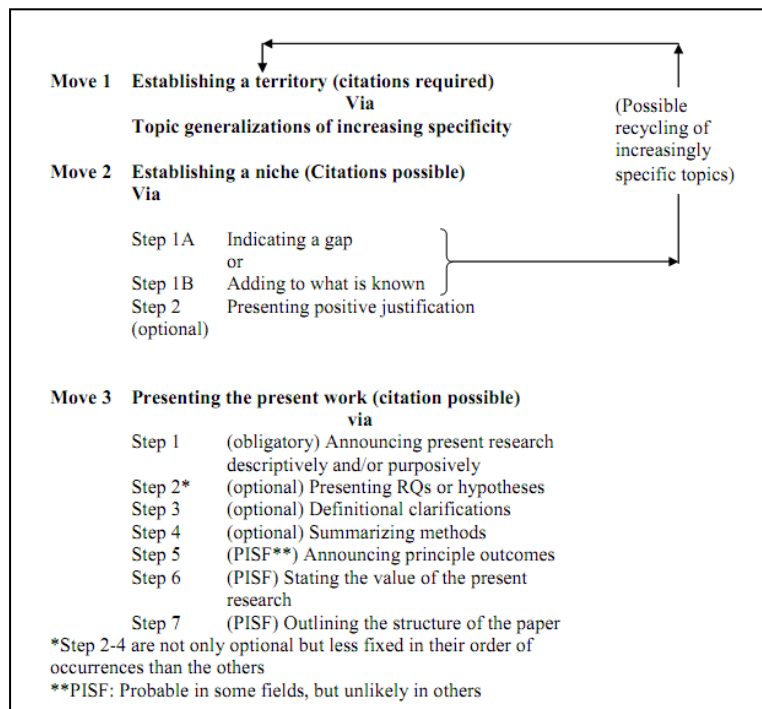
The archaic definition of rhetoric is the art and study on the use of language with persuasive effect in any given field; as such, rhetoric connotes the art of trickery, a way of masquerading qualities and obscuring information (Dawson, 1998; Maynard, 1998). A more contemporary definition for rhetorical literacy refers to skills on understanding the audience roles in shaping discourse, identifying and responding to the audience in terms of writing situation and being aware of one's own ideological stance and the audience's stance (Cook, 2002). In other words, rhetorical literacy skill refers to the skill to understand, analyze, evaluate and employ various writing strategies based on their comprehension of the audience, purpose, writing situations, research methods, genre, style and delivery techniques and media. Rather than having a fix practices in writing, rhetoric literacy provide the writers with the rhetoric tools to create and shape meaning within contexts of audience, purpose and writing situations (Cook, 2002). Rhetoric study can be dated back in Plato and Aristotle era however rhetoric has not been given much emphasis in Malaysian academic classroom. This could be explained why the Ministry of Higher Education (MoHE) found that critical thinking skill ranked the lowest among other soft skill elements in the national scale study on the soft skills development conducted among undergraduate students in public universities (MOHE,2010). Such trend is detrimental especially with the changing nature of scientific profession that requires these potential professionals to

be not only equipped with scientific and technical knowledge but also, capable of presenting those precious knowledge in lay man term and support their ideas sensibly (Alatas,2001; Merican,2005). In short, upon graduation, the students must be able to communicate effectively in various linguistic, cultural, professional and disciplinary domain and know what communication strategies are congruent with their target audience (Reimer, 2002; Cheah, Chen & Ting, 2005). Initial study (Alatas,2001; Zawiah,1994;) showed that rhetorical study in Malaysia has much to be explored and the study on rhetoric were mostly in literature (Baharom,2008), Malay language discourse, applied linguistic area of discourse and pragmatics and a few more under philosophy, policy and strategy (Alatas,2001; Zawiah,1994; Merican 2005) and mass communication (Juliana;2009). The underlying factor could be in the cultural differences and the lack of focus on rhetorical literacy in the academic curriculum. In relation to the issues presented previously, this study is motivated to investigate the rhetorical structures and variations in the introduction of academic research writing by NNE writers, specifically Malaysian writers and discuss the repercussion from pedagogic perspective

1.5 Create-A-Research-Space (CARS) model (Swales, 2004)

This study uses CARS model to analyze the structure of the research article introductions (RAI). CARS model (1990, 2004) have been used to analyze the rhetorical structure of RAI in many studies (Ahmad, 1997; Posteguillo, 1999; Mirahayuni, 2002, Kanoksilapatham, 2005; Adnan, 2008; Samraj, 2005; Pho, 2008; Shehzad, 2010). The model proposes a series of analytical units in form of ‘move’ and ‘step’ which made up a recognizable pattern of structured text. CARS model (2004) consist of three obligatory moves which can be broken down into steps. See diagram 1: Swales model (2004). Move 1 is ‘Establishing territory’ and it can be realized via ‘Topic generalization of increasing specificity’.

Diagram1: CARS model (Swales, 2004)



This is followed by Move 2 ‘Establishing a niche’ and writers were identified to accomplish this strategy using three possible step which are ‘Indicating a gap’, ‘Adding to what is known’ and ‘Presenting positive justification’. These strategies are carried out with ‘Possible recycling of increasing specific topics’ whereby the writers may make recurring effort on the previous moves and steps before moving on to act upon Move three which is ‘Presenting the present work’. The model put forward seven possible steps for writers to attain Move three. The first step of Move three which is ‘Announcing present research’ is obligatory and this step can be achieved ‘descriptively’ and, or ‘purposively’. Step two, three and four are optional and not necessarily come in the orderly manner. Respectively, they steps are ‘Presenting RQ or hypotheses’, ‘Definitional clarifications’ and ‘Summarizing methods’. CARS (2004) model posits that in this final Move, Step five, six and seven respectively are ‘Announcing principle outcomes’, ‘Stating the value of present research’ and possibly ends with ‘Outlining the structure of the paper’ and these steps

are 'probable in some field but unlikely in others'.

The choice of using CARS model for this study is mainly on the account of its prevalence, the availability of findings from diverse studies to be referred to and because of its robustness. CARS model represents the prevalent rhetorical pattern and has been described as being "seminal in shaping genre theory in English for specific purpose (ESP)" (Flowerdew, 2005, p. 322) having 'significance influence upon the study of RAIs' (Adnan, 2008, p.122), 'received prominence in the area of ESP' (Dong & Xue, 2010, p. 37), 'ground-breaking work has generated studies providing valuable insight' (Kanoksilapatham, 2005, p.270). This prevalence model has been used in countless studies which in turn, brought forth valuable findings and insights in the study of genre analysis especially in the area of RA writing across disciplines (Ngowu, 1997; Kanoksilapatham, 2005; Samraj, 2002; Shehzad, 2010) and across cultures of non native English writers (Ahmad, 1997; Swales and Najar, 1987; Mirahayuni, 2001; Jogtong, 2001; Al-Qahtani, 2006; Yaghoubi-Notash, 2012; Zand-Vakili and Kashani, 2012). Ahmad (1997) has analyzed the research article introduction (RAI) by Malaysian writers using CARS model to but the study was focused on RA written in Malay language and CARS model used was of 1990 version. Nevertheless, her insightful study provides valuable input and is reflected upon in the discussion section of this paper. CARS model is robust to the changes happening in the RA publication and to the findings from the subsequent studies. It has undergone a few modifications over the decades (Swales, 1987, 1990, 2004). Swales (2004) clarified that the model (1990) was due for modification (2004) as a result of "evolution in the genre itself or of further studies CARS model has been referred as'. As such, this paper embarks on exploring the outcome possibilities of using the significantly influenced CARS model (Swales, 2004) in analyzing the rhetorical moves of Computer Science RA written by Malaysian academicians.

2. Methodology

2.1 Move analysis

The move analysis is conducted to identify the moves and steps in the RAI. Identification of the moves and steps provide description and understanding on what rhetorical strategies are in used and how the strategies are achieved (Swales, 2004). As suggested by Upton and Cohen (2006) The first step requires identification of the functional categories or functional type of discourse unit which this study derived from CARS model (Swales, 2004). The model posits three rhetorical moves that can be realized using 10 variations of steps and possible recycling. Out of the ten steps, four steps were optional and another three were identified as "probable in some fields, but unlikely in others". This study looked at all the three moves, ten steps and observes the occurrence of possible recycling. The model serves as the analytical framework and the moves and step are used as the functional categories. For a start, the RA identified is downloaded and printed out. Due to the small number of the pilot samples, the analysis was done on the printed papers. The analysis notes are labeled on the sides and the linguistic descriptors are highlighted. The text was read and the cue words and structures as described by (Ahmad, 1997) were looked for. Upon identifying the move and step, labels are written by the sides as in M1S1, M1S2, M1S3 and so on.

2.2 Sampling of the population

This study employs purposive sampling that demands parameters of the population to be considered in choosing the case (Silverman, 2010). The parameters are identified as in groups, settings, individual where the process being studied are likely to occur (Denzin and Lincoln, 1992:202 as in Silverman, 2010). The corpus of the study consists of Computer Engineering scholarly journals written by the academicians in Malaysian universities listed in Scopus as in August 2010. Following the small size on qualitative study sampling (Denzin and Lincoln, 1994, Silverman, 2010) this study involves only five, the generalizability of this study is established by comparing similarities and differences across the contacts and resources gained from numerous previous studies.

The research articles published on the Sci Verse Scopus database is chosen because of the following reasons. Scholastic journals published in Scopus database has gained recognition which is evident through directives communicated to the academicians in various occasions (JPT 2010, MOHE 2011). Many universities in Malaysia want their academicians to publish in Scopus, ISI and impact factor journals and this aspiration is clear when some universities offer rewards to the writers in the forms of 'seed money' or research grants (UniMAP 2010, UniMAP 2011). Scopus has been recognized as an acceptable tangible return of revenue for research grants awarded by the main sponsoring bodies in Malaysia namely, MOHE and the Ministry of Science, Technology and Innovation (MOSTI). Scopus database is highly accessible and up to date. The data is laid out in user friendly environment making retrieval of information simple and fast. It has simple and intuitive interface (Sci Verse, 2011). Its features and functionality assist the sampling of population for this study, particularly the Affiliation Identifier function which automatically identifies and matches an organization with all its research output (Sci Verse, 2011). These functions enable information retrieval on the journal articles written by the authors in the affiliated universities

Table 1. Illustration on how the Move analysis is conducted on Research Article 1

Text Pilot ID 1	Move/Step	Remark
1. Introduction		
With an increasing human population, a smooth traffic flow is necessary to ensure safety.	M1	M1- Establishing a territory- (citation required)
There is continuous research on modeling complex behavior phenomena in traffic flows and occupant evacuation, and numerous researchers have applied their knowledge and skills to pedestrian [1], [2] and diversity behavior studies, in [3], [4] such as jam formation, flocking, and lane-formation [5], [6], [7], [8], [9], [10], [11].	M1	Via Topic generalizations of increasing specificity
To study these complex dynamical systems, several models have been proposed, including those of lattice gas [7], [19], [4], [5], [16] and cellular automata (CA) [5], [1], [13], [14], [17], [18], [19].	M1	
Particularly interesting are the CA models, since they can model both the individual and collective behavior of pedestrian dynamics observed experimentally (described by other complex models [5], [11], [13], [18], [19]).	M2	M2- Establishing a niche (Citations possible)
The CA are discrete dynamic systems dealing with evacuation situations in their capacity to develop complex behaviors from simple computation and rules.	Recycling	Possible recycling of increasingly specific topics
These rules allow specifying the new state of a cell, and the possibility of modeling complex dynamic systems from the specification of its components.		
An extra advantage is the detail provided by displaying the results graphically, allowing for easier study of the dynamics of these systems.	M2S2	M21A- Establishing a niche (Citations possible) via
One particularly interesting problem is the motion in a room with elderly occupants	M21A	Indicating a gap
Section 1, we investigate the pedestrian dynamics of elderly occupant evacuation in emergencies, we use CA as the basis of our simulation model, and concentrate on those cases involving the forced evacuation of a number of adult and elderly, within a building with a specific number of exits.	M3S7	M3S7- Presenting Present work (citation possible)
	M3S1	Via (Obligatory) Announcing present research
In Section 2, we describe the set of ruled governing the movement of pedestrians in the model. Detail methodology using fuzzy-logic controller in CA is explained in Section 3.	M1S7	M1S7- Presenting Present work (citation possible)
	M1S4	Via (PISF) Outlining the structure of the paper
Section 4 described how the elderly velocity algorithm is incorporated into the system.	M1S7	
	M1S4	
For Section 5, we describe our experimental work with different versions of this problem, and report the performance analysis of each case.	M1S7	M1S4- Presenting Present work (citation possible)
	M1S4	Via (optional)Summarizing methods
Finally, in Section 6, we summarize the results and point out possible future extensions.	M1S7	
	M1S4	
Structure- M1-M2-R-M21A-M21A- M3S7- M3S1- M3S7-M3S4-M3S7-M3S4-M3S7-M3S4-M3S7-M3S4		

3. Results

The data gathered from the move analysis were tabulated in the following table. All of the articles conformed to Swales's first move-step which is 'Establishing territory'. The rhetorical move on establishing territory was realized by all writers in the study. Citation were made and the topics were introduced with "increasing specificity" (Swales, 2004). The following extracts from Zainuddin and Lim (2010) illustrated how the move is realized.

The writers started with a general statement on human safety as in "With an increasing human population, a smooth traffic flow is necessary to ensure safety". The next sentence introduces the topic which is 'occupant evacuation' with increasing specificity "There is continuous research on modeling complex behavior phenomena in traffic flows and occupant evacuation, and numerous researchers have applied their knowledge and skills to pedestrian [1], [2] and diversity behavior studies, in [3], [4] such as jam formation, flocking, and lane-formation [5], [6], [7], [8], [9], [10], [11]". The topic of 'occupant evacuation' was introduced followed by an increasing specificity on the research topic. As proposed by Swales (2004), in Move 1, the general statement on the topic is established and then, gets more specific and citations are required. The move is fully realized in the following sentence gets more specific and contains more citation "To study these complex dynamical systems, several models have been proposed, including those of lattice gas [7], [19], [4], [5], [16] and cellular automata (CA) [5], [1], [13], [U4] [17], [18], [19]."

Swales model (2004) also proposed that after introducing the topic and getting the topic to be more specific, the niche of the article is established in Move 2. In this study, all of the writers confirm to the move which is move 2 "Establishing a niche". For example, Zainudin and Lim (2010) establish their niche which is "CA model" right after completing move 1 in their statement "Particularly interesting are the CA models, since they can model both the individual and collective behavior of pedestrian dynamics observed experimentally described by other complex models [5], [11], [13], [18], [19].". Swales (2004) also mentioned the possibility of citation made at this point. All of the articles in the study were found to fit into Swales's description.

Swales (2004) also added that move 2 which is establishing a niche can be realized using a number of steps which are Step 1A and Step 1B which are by "indicating a gap...or adding to what is known" or by using an optional Step 2 which is "presenting positive justification". All of the articles were found to use step 1A which is by indicating a gap. The sentence in Zainudin and Lim (2010) is used to illustrate the point "One particularly interesting problem is the motion in a room with elderly occupants". The gap is indicated in the phrase of "One particular interesting problem..." where the writers pointed on the existing problem which gave a ground for the research gap. The other four articles also indicated the gap in their study area.

Zainudin and Lim (2010) were found to make use of Step 2 which is presenting positive justification and in such, fulfilled Move 2 with more rigor in the sentence of "An extra advantage is the detail provided by displaying the results graphically, allowing for easier study of the dynamics of these systems". The phrase "An extra advantage...allowing for easier..." indicated the reason and benefit for CA model which was the niche of the study.

Next, the model indicated that the step 1A and 1B can be followed by 'recycling of increasing specific topics'. It was found that the writers in the study conformed to this the step. Even though this step is described as non obligatory in the model, all of the articles studied used recycling step before moving on to step 3. To illustrate, Zainuddin and Lim (2010) reinstated their niche and again mentioned their topic with more specification. "The CA are discrete dynamic systems dealing with evacuation situations in their capacity to develop complex behaviors from simple computation and rules. These rules allow specifying the new state of a cell, and the possibility of modeling complex dynamic systems from the specification of its components".

Table 2. Summary of the micro analysis

ID	M1	M2	M2S1A	M2S1B	Reyc	M2S2	M3	M3S1	M3S2	M3S3	M3S4	M3S5	M3S6	M3S7
1	*	*	*		*	*	*	*			*			*
2	*	*	*		*		*	*			*			*
3	*	*	*		*		*	*		*	*			
4	*	*	*		*		*	*						*
5	*	*	*		*		*	*				*	*	

The last move in the model is move 3 which is "Presenting the present work" with possible use of citation. In realizing move 3, Swales specified an obligatory Step 1 which is 'announcing present research descriptively and/or purposively'. All of the writers in the study were found to have realized this move using Step 1.

Swales further proposed that this last move can also be realized using any three optional steps and/or any three steps that are "probable in some field but unlikely in others" (PISF). Among these steps mentioned, the most popular among the subjects in the study were step 4 which was described as obligatory and step 7 which was suggested as

“probable in some fields, but unlikely in other”. Step 4 is “summarizing the methods” and Step 7 is “outlining the structure of the paper.”

For instance, Zainuddin and Lim (2010) realized Move 3 which is to present their work by announcing the present research descriptively as in “Section 1, we investigate the pedestrian dynamics of elderly occupant evacuation in emergencies, we use CA as the basis of our simulation model, and concentrate on those cases involving the forced evacuation of a number of adult and elderly, within a building with a specific number of exits.”. No citation was made and this suited the model that describe citation as a possibility and not required.

The writers in the study were also found to use mostly Step 4 which is “summarizing methods” and Step 7 which is “Outlining the structure of the paper”. The model indicated that Step 4 is optional and Step 7 is probable in some field. Zainuddin and Lim (2010) have used these two steps in alternately cycles. The first cycle of combination Step 4 and Step 7 was in sentence “In Section 2, we describe the set of ruled governing the movement of pedestrians in the model. Detail methodology using fuzzy-logic controller in CA is explained in Section 3.”. In this sentence, the writers fulfilled Step 7 first by outlining the structure of section 2 in their paper and then moved on to Step 4 which is summarizing the methods by mentioning “...methodology using fuzzy...” and Step 7 is embedded in the next phrase of “...explained in Section 3.”. The writers used Step 4 and Step 7 in cycles and some of the Steps were embedded.

4. Discussion

This study investigated the rhetorical structures and variations in the introduction of academic research articles by the Malaysian writers by using Swales model (2004). The findings from the analysis of this study showed that the writers were successful in realizing the common rhetorical strategies. The writers accomplish all the three moves proposed in Swales model (2004). The writers were also found to have carried out the obligatory steps in the model such as establishing territory with citation, indicate a gap and announce the present research. However, whether or not the writers were aware of the influence and potential of the strategies being practiced can only be found out with further examination such as by interviewing the writers.

Four optional steps were listed in the model and one of it was achieved by all writers. The optional step was in move 3 which is summarizing methods. Another optional step was Step 3 giving “definitional clarifications” which was also undertook in one of the articles. In the model, citations in establishing the niche and recycling of increasing specific topics were described as possible and these too were also performed clearly by the writers.

Discipline of research article was identified as a contributor to the choice of rhetorical strategies used in writing. Swales model (2004) listed three steps which were “Probable in some fields, but unlikely in others” One of these steps was carried out in most of the papers. Step 7 which is “Outlining the structure of the paper” were completed in three of the articles. Whether or not the step is a common strategy among the writers on Computer Science discipline can only be confirm with a larger number of samples.

5. Conclusion

There have been critics that most research article writing models are mostly derived from Anglo-European perspective, “a critique of the CARS model is that it does not take into account cultural or intercultural conventions and the genre has been deemed to be partial to Anglo-American writing.” (Ibrahim and Nambiar, 2012). In response, awareness on various tested and validated models for research article writing gives an extra edge to the language instructors and students as being suggested by Shalamova (2008) “To help engineering students master rhetorical concepts, technical writing instructors should develop an understanding of engineering disciplinary conventions and deliver....”.

Apart from having an awareness of different types of writing models, knowing the readership also helps to decide how much effort should be put in complying to the model of Anglo- American perspective. If the research article is intended for a European journal or an American journal, putting reasonable effort to adhere to the conventional Anglo-European model is more realistic in comparison to using the models developed based on cultural variance. While grammatical mistakes can be ironed out by a language editor, the rhetorical presentation of research ideas which is addressed as a crucial problem “implies more than mastery of grammar and requires the knowledge of discourse” (Mirahayuni, 2002, p.17).

In conclusion, the article in the study showed that the Malaysian writers have accomplished the obligatory moves and also fulfilled many of the non obligatory moves listed in Swales model. Apart from that, the study indicated that Swales model can be used to investigate the adherence and agreement of Malaysian research article writing with the native writing practice.

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