

**RHETORICAL STAGES AND LINGUISTIC  
MECHANISMS IN FORESTRY  
RESEARCH REPORTS**



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UNIVERSITI MALAYSIA SABAH  
2017**

**RHETORICAL STAGES AND LINGUISTIC  
MECHANISMS IN FORESTRY  
RESEARCH REPORTS**

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**UMS**

**THESIS SUBMITTED IN FULFILMENT OF THE  
DEGREE OF DOCTOR OF PHILOSOPHY**

**CENTRE FOR THE PROMOTION OF  
KNOWLEDGE AND LANGUAGE LEARNING  
UNIVERSITI MALAYSIA SABAH  
2017**

## DECLARATION

I hereby declare that the material in this thesis is my own, except for quotations, excerpts, summaries and references, which have been duly acknowledged.

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## CERTIFICATION

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MECHANISMS IN FORESTRY RESEARCH REPORTS**  
DEGREE : **DOCTOR OF PHILOSOPHY  
(ENGLISH LANGUAGE STUDIES)**  
VIVA DATE : **19 JANUARY 2017**



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## **ACKNOWLEDGEMENTS**

As I come to the close of a most rewarding journey, I stand in deep reverence before the Almighty who planned this journey for me and guided me along every step of the way. While I have learned much about genre analysis in the course of this study, I also learned the discipline to remain focused on tasks while working towards a distant target. I could have never done it by myself and so I thank all the people whom God has put in my path to see me along.

The first person I need to acknowledge is my supervisor, Associate Professor Dr. Jason Lim Miin Hwa. I am wordless to describe the deep dedication he shows towards his work. I thank him for the number of years he spent reviewing and discussing my writing till my analysis and presentation rose to meet his exacting standards. From my first faltering steps at analysing data to this point when all the strands of the study have come together, he has been a patient and wise mentor. Not only has he taught me the intricacies of research, he has also deeply imprinted in my mind how much a true teacher gives of oneself. I also thank my second supervisor, Ms. Nor Arifah binti Mohd. Nor for her helpful feedback that has helped me improve my work.

I thank the Dean of the Centre for the Promotion of Knowledge and Language Learning (PPIB) and other faculty members of UMS who have assisted me in carrying out my work. I am grateful for the efficient service provided by the administrative staff of PPIB, especially Ms. Amina, who was always responsive to my queries. I also thank the support provided by the administrative staff of the Centre for Postgraduate Studies.

I am deeply indebted to my specialist informants, both in Malaysia and India who spared their time to provide me with insights into how a researcher goes about crafting a publishable research article. They have been storehouses of knowledge and experience and amazingly co-operative.

I express my deep gratitude to my mother-in-law, Mrs. Mary Selestine, who dreamed a future for me before I was even ready to dream it for myself. When I was ready to take up the dream, she has been a source of endless support. I could not have spent many hours on this research nor focused on my work had I not known that my young children were in the safest of hands.

I thank my father, the late Dr. Mathew Ouseph and my mother, Dr. Elizabeth Chacko, who have always inspired me to reach for my best. Last but not the least, this work would not have been possible but for the encouragement and support of my husband, Joseph Selestine, for being the steadying hand on this rocky ride, for celebrating with me the highs and helping me shrug off the lows, and for reminding me always to train my eyes on high from where deliverance has never failed.

Renu Joseph  
21 July 2016

## **ABSTRACT**

### **RHETORICAL STAGES AND LINGUISTIC MECHANISMS IN FORESTRY RESEARCH REPORTS**

Research articles constitute a key genre because of their central role in the communication of new knowledge in all academic disciplines. Researchers are often evaluated on the basis of their publications in peer-reviewed journals, and their professional advancement depends on their ability to conform to the rhetorical requirements and language conventions set by journals. However, novice researchers and second language learners of English often lack the writing skills necessary to meet the editorial standards of top-tier international journals. It is therefore necessary to examine the works of expert writers to identify the rhetorical stages and language mechanisms used by them so that we can create a framework that novice writers can follow. Although numerous studies have used genre analysis to study research articles in various disciplines, no study to date has analysed research articles in Forestry. This study aims to identify the schematic structures and linguistic mechanisms employed in Forestry research reports in order to create a pedagogically applicable model. A genre-based analysis based on Swales' (1990, 2004) move-step analysis framework was used to study 60 empirical research reports in Forestry following the Introduction-Methods-Results-Discussion structure. The researcher also interviewed eight specialist informants in the field of Forestry to seek additional information which could not be obtained via textual analysis. The analysis indicates that the generic structure of Forestry research reports incorporate a total of 20 rhetorical moves and 41 steps. Although the Introduction section reflects Swales' (2004) CARS model at the move-level, differences are evident at the step level. The obligatory and quasi-obligatory moves in the Methods section include those describing research sites, sampling procedures, data collection procedures and data analysis procedures. The analysis of the Results section reveals a three-move structure in which authors set a stage for their results before presenting findings and comments on their findings. About paving the way for results, only the description of data analysis procedures constitutes a principal step, while the only comments that are relevant in the Results section include (1) the explanations for findings and (ii) the evaluation of the study which emphasises limitations and advantages. The Discussion section focuses on establishing links between new and existing knowledge by comparing current findings with the findings of past research. It also focuses on furthering disciplinary knowledge through recommendations for practical applications and directions for future research. This study has identified the salient and recurring linguistic mechanisms in every step and discussed them with related examples. Inter-disciplinary differences and similarities have also been revealed via comparisons between the generic structure of Forestry research reports and those reported by previous researchers for other disciplines. This study shows that varying degrees of emphasis is required for different rhetorical steps while English language instructors design teaching materials aimed at guiding learners in writing Forestry research reports.

## **ABSTRAK**

### **PERINGKAT-PERINGKAT RETORIK DAN MEKANISME LINGUISTIK DALAM LAPORAN PENYELIDIKAN PERHUTANAN**

Artikel-artikel penyelidikan merupakan genre utama yang menyampaikan pengetahuan baharu dalam pelbagai disiplin akademik. Para penyelidik sering dinilai berdasarkan kepada hasil penerbitan mereka dalam jurnal yang dikaji oleh rakan seangkatan mereka, dan justeru kemajuan profesional bergantung kepada keupayaan mereka untuk memenuhi keperluan retorik serta konvensi bahasa yang ditekankan oleh jurnal-jurnal berkenaan. Walau bagaimanapun, penyelidik baharu dan pelajar Bahasa Inggeris sebagai bahasa kedua biasanya kurang berkemahiran dari segi konvensi penulisan yang diperlukan oleh jurnal-jurnal yang bertahap tinggi di peringkat antarabangsa. Oleh itu, kita perlu mengkaji karya-karya penulis pakar untuk mengenal pasti peringkat-peringkat retorik serta mekanisme yang digunakan supaya kita dapat mewujudkan satu rangka yang boleh diikuti oleh penulis baharu. Meskipun banyak kajian menggunakan analisis genre untuk mengkaji artikel penyelidikan dalam pelbagai bidang, setakat ini belum ada kajian dilakukan untuk menganalisis artikel penyelidikan dalam bidang Perhutanan. Kajian ini bertujuan mengenal pasti struktur skema dan mekanisme linguistik yang digunakan dalam laporan penyelidikan Perhutanan dengan tujuan mewujudkan satu model yang berguna dari segi pedagogi. Analisis genre yang berdasarkan kepada rangka analisis gerak-langkah Swales (1990, 2004) telah digunakan untuk mengkaji 60 laporan penyelidikan empirikal dalam bidang Perhutanan yang mengikuti struktur 'Pengenalan-Kaedah-Keputusan Kajian-Perbincangan'. Penyelidik juga menemubual lapan orang pakar rujuk dalam bidang Perhutanan untuk memperoleh maklumat tambahan yang tidak dapat diperoleh melalui kajian teks. Analisis berkenaan menunjukkan bahawa struktur generik laporan penyelidikan Perhutanan merangkumi sebanyak 20 'gerak retorik' dan 41 'langkah retorik'. Walaupun bahagian Pengenalan mencerminkan model CARS Swales (2004) pada tahap 'gerak retorik', perbezaan jelas telah dikesan pada tahap 'langkah retorik'. Dalam bahagian Kaedah Kajian, 'gerak-gerak retorik' yang wajib dan separa wajib merangkumi segmen-segmen yang menghuraikan tapak penyelidikan, prosedur persampelan, prosedur pengumpulan data dan prosedur analisis data. Bahagian Keputusan Kajian menunjukkan satu 'struktur tiga-langkah' di mana penulis memberi penjelasan latarbelakang mengenai keputusan kajian yang akan diberi sebelum membentangkan penemuan dan ulasan mengenai penemuan mereka. Dalam hal menyediakan laluan untuk keputusan kajian, hanya huraian mengenai prosedur analisis data merupakan satu langkah retorik utama, manakala komen yang berkaitan dalam bahagian Keputusan Kajian merangkumi (i) penjelasan untuk penemuan, dan (ii) penilaian kajian yang menekankan batasan dan kelebihan kajian. Bahagian Perbincangan memberi fokus kepada kaitan di antara pengetahuan baharu dan pengetahuan yang sedia ada dengan membandingkan penemuan semasa dengan penemuan dalam penyelidikan pada masa lalu. Ia juga memberi penjelasan mengenai pengetahuan dalam bidang berkenaan melalui cadangan-cadangan tentang aplikasi praktikal dan hala tuju untuk penyelidikan masa depan. Kajian ini telah mengenal pasti mekanisme linguistik penting dan berulang kali digunakan dalam setiap langkah dan membincangkannya dengan contoh-contoh berkaitan. Perbezaan dan persamaan di antara pelbagai disiplin juga didedahkan melalui perbandingan di antara struktur generik laporan penyelidikan Perhutanan dan struktur generik yang dilaporkan oleh penyelidik-penyelidik sebelum ini untuk disiplin-disiplin yang lain. Kajian ini menunjukkan bahawa pengajar Bahasa Inggeris perlu memberi penekanan yang berbeza mengikut tahap kepentingan 'langkah-langkah retorik' yang berbeza apabila mereka menyediakan bahan pengajaran mengenai penulisan laporan kajian dalam bidang Perhutanan.

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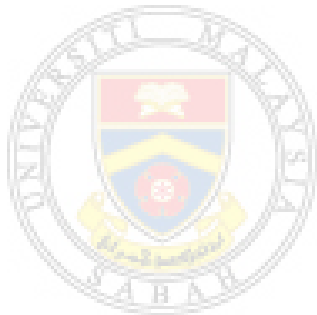
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## LIST OF ABBREVIATIONS

<b>CARS</b>	-	Create a Research Space
<b>DFID</b>	-	Department for International Development
<b>EAP</b>	-	English for Academic Purposes
<b>EAP</b>	-	English for Academic Purposes
<b>EOP</b>	-	English for Occupational Purposes
<b>ESP</b>	-	English for Specific Purposes
<b>FAO</b>	-	Food and Agricultural Organisation
<b>ICT</b>	-	Information and Communication Technology
<b>IMRD</b>	-	Introduction-Methods-Results-Discussion
<b>IMRD(C)</b>	-	Introduction-Methods-Results-Discussion-Conclusion
<b>LIDAR</b>	-	Light Detection and Ranging
<b>L1</b>	-	First Language
<b>L2</b>	-	Second Language
<b>NP</b>	-	Noun Phrase
<b>NRS</b>	-	New Rhetoric School
<b>PISF</b>	-	Probable in some fields, but unlikely in others
<b>RA</b>	-	Research Article
<b>RAI</b>	-	Research Article Introduction
<b>SFL</b>	-	Systemic Functional Linguistics
<b>SIA</b>	-	Specialist Informant A
<b>SIB</b>	-	Specialist Informant B
<b>SIC</b>	-	Specialist Informant C
<b>SID</b>	-	Specialist Informant D
<b>SIE</b>	-	Specialist Informant E
<b>SIF</b>	-	Specialist Informant F
<b>SIG</b>	-	Specialist Informant G
<b>SIH</b>	-	Specialist Informant H
<b>SSC</b>	-	Statistical Service Centre (University of Reading, UK)
<b>SPO</b>	-	Subject-Predicator-Object
<b>SPC</b>	-	Subject- Predicator-Complement
<b>SPA</b>	-	Subject- Predicator-Adverbial
<b>UNCED</b>	-	United Nations Conference on Environment and Development

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## CHAPTER 1

### INTRODUCTION TO THE STUDY

#### 1.1 Background

Academics and professionals all over the world aim to get their research published in reputed international journals, a substantial number of which are presented in English (Hyland, 2006; Kanoksilapatham, 2015; Mur Dueñas, 2009; Sheldon, 2011). Research articles (RAs) therefore constitute a key genre because of their pivotal role in the communication of new knowledge in academic disciplines (Swales, 1990). This has led researchers to consider the genre to be the “culmination of an involved process of research” (Tessuto, 2015: 13), the rightful point where the process of research ends. For research to be considered successful, it is expected that it would be peer-reviewed and published. Publications are the most important measure by which researchers are evaluated, while peer review provides a critical validation of the research methods and findings. It follows that professional progress and visibility depends not only on the content of research, but also on the researcher’s ability to conform to the rhetorical format and language standards set by journals. Writing research articles in English, therefore, is a critical skill to be imparted to all aspiring members of various disciplinary communities.

In spite of the significance accorded to research articles, both native and non-native speakers often find research articles difficult to write as they require a considerable degree of familiarity with (i) the existing RAs in a given field, and (ii) writing skills needed to express ideas in a form that is acceptable to the discourse community to which the writer belongs (Kanoksilapatham, 2005). In particular, the combined effect of the predominance of English and the desirability of getting research published puts non-native English researchers at a disadvantage in that they have to compete for publication by writing in a language that is not their own (Ahmad, 1997; Kanoksilapatham, 2011, 2015). The difficulty that writers face in writing well-crafted research articles has led to a number of studies on the rhetorical structure of the genre in the last three decades (e.g., Anthony, 1999;

Kanoksilapatham, 2005, 2011, 2015; Lin and Evans, 2012; Lim, 2006, 2012a; Nwogu, 1997; Peacock, 2002, 2011; Samraj, 2002; Stoller and Robinson, 2013; Tessuto, 2015; Yang and Allison, 2003).

The main inspiration behind these studies has been Swales' (1990) Create-A-Research-Space (CARS) model, which was devised to analyse the Introduction section of empirical research articles following the Introduction-Method-Results-Discussion macro-structure. The CARS model (Swales, 1990) demonstrated how textual units within research article Introductions could be classified into 'moves' and 'steps' based on their communicative functions. The approach, currently known as 'move analysis' lend itself well for extension into other parts of the empirical research article, namely, the Methods, Results and Discussion sections. Move analysis is based on the English for Specific Purposes (ESP) approach to genre analysis, which aims to make the connection between text structure and its communicative purpose explicit to learners (Bawarshi and Reiff, 2010). The explicit knowledge of the rhetorical moves and linguistic mechanisms of RAs enables writers to wield language in ways approved by the discourse community. In this regard, a genre-based understanding of research articles in a discipline can help learners to be more conscious of the conventions of writing, and enable them to produce texts that are well-formed in terms of linguistic choices and structure (Samraj, 2002). This will eventually facilitate the assimilation of these students into the academic or professional discourse communities they aspire to join. The current research is motivated by the recognition that new aspirants into a discipline, especially those who are non-native users of English, need to be trained in the disciplinary conventions of writing research articles.

## **1.2 Statement of the Research Problem**

In the course of teaching English for Research Purposes to students at the tertiary level, the researcher encountered two problems. First, the researcher noticed that many students found it difficult to read and understand the content of research articles, as the formal register of academic English differs considerably from the everyday spoken or written language that students are more comfortable with. If reading research articles for the purposes of comprehension was not an easy task,

it could be assumed that it was possibly more difficult to produce research articles of a required standard. Second, in the classroom where students from different academic disciplines were addressed together, students often worked with generic models that did not necessarily match the sample articles from their own disciplines. For instance, certain information elements presented in the generic models were not found in the RAs of certain disciplines.

While the first problem can be addressed by appropriate training in the language and information conventions of the research articles, the second problem points out the need for instructors to provide discipline-specific models and examples that resonate with students from various disciplines. Unfortunately, such discipline-specific models are not always available, as is the case with Forestry. Research articles in Forestry, an established discipline that dates back to the 18<sup>th</sup> century, have not been brought under the purview of genre-based analysis. Whereas certain disciplines relating to the natural world, such as Wildlife Behaviour (Samraj, 2002), Conservation Biology (Samraj, 2002) and Botany (Weissberg, 1984, as cited in Swales, 1990) have been studied, a genre-based analysis of research articles in the field of Forestry has yet to be undertaken. It is conceivable that the absence of research into the rhetorical organisation of Forestry RAs works to the disadvantage of students in the discipline, especially in the light of the fact that the findings of past studies cannot be generalised across all disciplines (Ozturk, 2007; Samraj, 2002).

Forestry is the science of managing forest environments. Forests are among the most valuable resources of any country because of their contribution to the economy in terms of wood products, medicines, and fuels. Their ecological significance arises from their status as the living environments for various species of plants, animals and birds as well as their role as biological filter systems that clear the air and water of impurities (Burton, 2013). The active management of forests can be traced back to the late 18<sup>th</sup> century when forests began to be appreciated as more than just a constant supply of wood. Since then the focus of Forestry has shifted to the "interaction between forest and its environment, on the maintenance and restoration of forest fertility, on the regulation of stream flow and

on the provision of a suitable environment for valuable fish and wildlife” (Blakeney, 2013: 45).

Forestry programmes are offered in almost all major universities at undergraduate and graduate levels with the aim to promote learning and research and to provide training for forest personnel. In Malaysia, Forestry programmes are offered in Universiti Putra Malaysia, Universiti Malaysia Kelantan, Universiti Malaysia Terengganu, and Universiti Malaysia Sabah. Professional forestry education in Malaysia can be traced back to 1976 when the Faculty of Forestry was established in Universiti Putra Malaysia. Courses offered by the university have reflected the changing needs of the public and private sectors and the focus at various times have been on timber production, sustainable forest management, forest conservation, biodiversity conservation and plantation forestry (Ratnasingam, Ioras, Vacalie, and Wenming, 2013). Forestry as a discipline is particularly significant in Malaysia, which is seen as a key player in sustainable forestry practices in the tropics (Ratnasingam et al., 2013).

However, to the researcher’s knowledge, there are no specific guidelines available for instructing students about Forestry research articles. Although manuals and guidelines published by agencies such as the Food and Agricultural Organisation (FAO) of the United Nations and other institutes and departments of Forestry provide insight on the organisation and content of research reports and on the appropriate use of English for writing such reports, there are no studies that link the different information elements within Forestry research articles to their general linguistic realisation. For example, although the content to be included under the Methods section is covered by some guidelines, the said documents generally do not elaborate on the use of passive structures as a salient feature of Methods sections. Nonetheless, such an explicit link between the communicative purposes of Forestry writers and their linguistic expressions will be of immense use to novice writers aiming to get their research articles published.

Therefore, this study addresses the need to provide students of Forestry with a discipline-specific model of the rhetorical structure and lexico-grammatical