

A COMPARATIVE MOVE ANALYSIS OF INTER-DISCIPLINARY RESEARCH ARTICLES WRITTEN BY REPUTABLE INDONESIAN AUTHORS THROUGHOUT THEIR EARLY-CAREER PERIOD

Athirah Jihan Khairani

English Language and Literature, Universitas Pendidikan Indonesia, Bandung, Indonesia
Email: athirah.jihan@upi.edu

Eri Kurniawan

English Language and Literature, Universitas Pendidikan Indonesia, Bandung, Indonesia
Email: eri_kurniawan@upi.edu

Arif Husein Lubis

English Language and Literature, Universitas Pendidikan Indonesia, Bandung, Indonesia
Email: lubis_ah@upi.edu

APA Citation: Khairani, A. J., Kurniawan, E., & Lubis, A. H. (2023). A comparative move analysis of inter-disciplinary research articles written by reputable Indonesian authors throughout their early-career period. *Indonesian EFL Journal*, 9(2), 95-108. <https://doi.org/10.25134/ieflj.v9i2.8783>.

Received: 19-03-2023

Accepted: 23-05-2023

Published: 30-07-2023

Abstract: Publishing scientific papers, particularly research articles (RAs), has become a requirement and essential component for academics' life. As a result, there is a growing need for academics to produce research articles for international publications. However, many writers, especially novice and inexperienced ones, still struggle to achieve this goal because they fail to adhere to the accepted conventions. This study attempts to look into the rhetorical moves in full-length English RAs written by reputable Indonesian lecturers from the hard and soft sciences disciplines in the early stage of their careers. This study employed a modified framework of analysis proposed by Maswana et al. in 2015. The findings showed that, in general, the papers' rhetorical structures from abstract to conclusion were quite comparable, reflecting the universal writing rules of a research paper. However, the striking difference lies in the method section, specifically the absence of Move 5 in all soft sciences articles. This may be due to disciplinary conventions. The findings of the study may offer insightful instructional material that can assist students or researchers in honing their academic writing abilities.

Keywords: *early-career; full-length English RAs; hard sciences; move analysis; rhetorical structure; soft sciences.*

INTRODUCTION

The productivity of publishing academic writing, specifically research articles (RAs), has become an obligation and an integral part of the academicians and scholar's life. Hence the increasing demand for having the ability to write research articles for international publication purposes is also evident. With their skills, scholars or academicians can increase their publication productivity rate, which is one of the metrics for highlighting both personal and institutional reputations. (Suherdi *et al.*, 2020).

One of the factors that most affects a researcher's chances of having their work approved and published in respectable scientific journals is the quality of good and acceptable articles. Unlike ordinary writing, academic writing has certain rules that aim to provide information that is acceptable in an academic

environment. This entails communicating your thoughts in a way that is clear, well-supported, logically organized, and reasoned (Fang, 2021). Moreover, each section in a journal article has its own communicative purposes but is interconnected. Hence, the rhetorical organization, better known as discourse patterns, is an important element in assessing the article's quality. However, novice writers or early-career academics (ECAs) frequently lack the necessary skills to write research articles since they may find it difficult to communicate their communicative meaning. This may have something to do with their lack of knowledge with the interpersonal and interactive aspects of research articles, which can differ between disciplines. Likewise, as established by earlier research, many disciplines (e.g 'hard' and 'soft' sciences) favor different discourse structures

(Kashiha & Marandi, 2019). Lacking or having little knowledge of the writing conventions and standards makes it challenging for them to develop a research article, which can lead to failure for many authors (Kaya & Yağız, 2020).

As was already mentioned, the publication of RAs in recognized journals has become a requirement and an essential component of academicians' life. Hence academics are under increasing pressure to produce research outputs in the current research-focused environment and as a primary focus of university research strategies. ECAs who are striving to balance new administrative and instructional requirements with creating their own autonomous research trajectories may find this strain to be especially overwhelming (Kent et al., 2017). The term Early Career Academics (ECAs) refers to those who start a new career in an academic environment, and have different roles according to the focus of the job (e.g. research-only positions, teaching-only positions, and positions that combine research and teaching), and status (e.g. fixed term or permanent) (Hollywood *et al.*, 2020).

Even though there are several updated handbooks about academic writing (such as Bailey, 2021; Cargill & O'Connor, 2021; and Fang, 2021) that provide internationally accepted guidelines for academic writing, challenges and difficulties remain a top concern for researchers when it comes to scientific publication, particularly in the study of discourse patterns. In fact, writing a research paper in English is a tough and arduous endeavor, especially for those who learn English as a second or foreign language (Ceylan, 2019). The lack of grasp of academic writing conventions and cognitive processes (Nenotek et al., 2022) could indirectly impacts the author's ability to organize information in each section of the RAs; in other words, the degree to which an article will be accepted by the editors of international journals depends on the quality of academic writing skills used for research publication.

Therefore, efforts must be made to overcome these hurdles. One method is by using a genre analysis as the approach to examine the structural organization of RAs. Genre analysis aids in comprehending the notion of rhetorical organization in a research article. Swales (1990) defined rhetorical organization as a collection of communicative functions (moves) and sub-communicative functions (steps) that are used to communicate the intended information successfully. His Create-A-Research-Space

(CARS) model has been extensively used in various studies, particularly for introduction section (Afrizon et al., 2018; Indrian & Ardi, 2019; Lu et al., 2021).

Several previous studies have examined the rhetorical organization of abstract discourse patterns (Amnuai, 2019; Kurniawan et al., 2019; Nurcik et al., 2022); introduction (Lu et al., 2021; Luthfianda et al., 2021; Ebadi et al., 2019); literature review (Rabie & Boraie, 2021); method (Cotos et al., 2017; Chuang & Chen, 2021); findings and discussion (Lubis, 2019; Suherdi et al., 2020); conclusion (Alkamillah et al., 2022). There are also several studies that have thoroughly examined all parts of the RAs (Maswana et al., 2015; Ye, 2019). The findings generally show that there are variations in the way the researchers manifest their rhetorical organization and realize their linguistic features.

Although a wide range of discourse patterns analyses has been carried out using various approaches and throughout the sections of the previously mentioned articles, research that focuses on exploring the discourse patterns of full-length RAs written by reputable Indonesian authors throughout their early career period and across disciplines ("hard" and "soft" sciences) has so far been lacking in the previous literature. Therefore, an attempt has been made to explore the discourse patterns and the differences in the prominence of rhetorical moves projected by reputable Indonesian authors in the early stage of their careers and across two disciplines. As stated by Lubis (2019) that cross-disciplinary comparative studies are still being carried out because there is an assumption that the differentiating characteristics of disciplines produce various manifestations of rhetorical organization.

Investigating the manifestations of the rhetorical organization of full-length RAs across disciplines can yield useful educational materials that can help students or scholars to improve their academic writing skills. The findings will assist students or inexperienced writers to write an "excellent" research article. By employing move analysis, it can be beneficial for novice writers who are unfamiliar with a genre by introducing them to the conventions of the texts and structures of scientific discourse, and it can help establish precise learning goals and acts as a starting point for novice's comprehension by providing a cohesive text through metadiscourse practices (Kashiha & Marandi, 2019).

In order to portray a clearer picture of the discourse patterns of research articles belonging to highly reputable lecturers in their early careers, the present study addressed the following two questions: (1) How do highly reputable lecturers manifest the rhetorical organization of their English RAs at the beginning of their careers? (2) How does the rhetorical organization of English RAs differ according to their respective fields?

METHOD

This study used a comparative descriptive qualitative research design to compare the variations in the manifestation of rhetorical organizations in RAs in the field of soft and hard sciences, specifically in the sub-discipline of engineering, chemistry, education, and management. This is in line with the aim of this study which not only describes the structure of the discourse patterns of English articles written by highly reputable lecturers in their early careers, but also compares the discourse patterns of their articles across disciplines.

This present study involved four lecturers with a high reputation from a reputable indexing institution. The criteria for the participants that have been determined are as follows: 1) have the highest Scopus h-index in their affiliation in the fields of soft and hard sciences, and 2) are still active as permanent lecturers at the university. Four highly reputable lecturers were selected from a state university in Indonesia. Two lecturers from the soft sciences discipline have *h*-Scopus index of 7 and 9, and two lecturers from the hard sciences discipline have *h*-Scopus index of 13 and 33. A consent form was provided and given to the lecturers in order to obtain their consent to analyze the RAs. After the lecturers consented to have their articles examined, a cohort of the research corpus was collected.

The corpus of this research consisted of 16 English RAs, and each discipline contributed eight RAs. The articles were selected randomly which were published over a period of approximately five years from the beginning of the lecturers' career paths which varied from each lecturer starting from 2009-2019. The chosen articles were not limited only to those with an IMRD structure. Moreover, each sub-discipline consisted of four RAs from various Scopus-indexed journals.

Table 1. *Publication year and sub-disciplines*

Research article no.	Publication year	Sub-disciplines
----------------------	------------------	-----------------

1	2009	Engineering
2	2009	(Hard
3	2009	Science)
4	2010	
5	2014	Chemistry
6	2017	(Hard science)
7	2018	
8	2018	
9	2015	Education
10	2016	(Soft Science)
11	2017	
12	2017	
13	2018	Management
14	2018	(Soft Science)
15	2019	
16	2019	

The journals included in the dataset are as follows: Chemical Engineering Journal, Material Letters, Microporous and Mesoporous Materials, Langmuir Article, WSEAS Transactions on Power Systems, Indonesian Journal of Science & Technology (IJAL), TELKOMNIKA, Journal of Engineering Science and Technology, American Journal of Applied Sciences, New Educational Review, TOJET: The Turkish Online Journal of Educational Technology, Management Science Letters, Research in World Economy, and Journal of Southwest Jiaotong University. It should also be noted that since the aim of this research is to compare the variations in the manifestation of rhetorical organizations written by highly reputable lecturers in their early careers, several journals are no longer indexed in Scopus.

Maswana et al. (2015) model of rhetorical structure served as the foundation for the overall analysis. The model was based on the 11 move categories discussed in Nwogu (1997) and incorporated the move of an abstract adhering to the work of Salager-Meyer (1990, 1992). The outcome was a final move classification list that contained 12 moves (including the abstract) and 38 steps. In the preliminary analysis of several articles, it was found that the final move classification of Maswana et al. (2015) is applicable compared to other move categories classification.

After all of the RAs had been gathered, examined, and understood as a whole, a four steps approach for the data analysis was carried out. First, all sections of the articles were broken down into their communicative purposes. Second, the data were separated and organized into tables in the Excel sheet according to their discipline. Third, each communicative purpose was identified with the corresponding moves and steps based on the model framework. Lastly, the

Athirah Jihan Khairani, Eri Kurniawan, & Arif Husein Lubis

A comparative move analysis of inter-disciplinary research articles written by reputable Indonesian authors throughout their early-career period

rhetorical realizations of the four disciplines were analyzed, compared, and computed. Table 2 demonstrates the sample analysis process and its results.

Table 2. A sample of the analysis process in labeling and classifying the communicative purposes

RA No. 11	Label (Step-based)	Classification (Move-based)
This research aims to develop a model of a civic education textbook on the basis of living values education.	Purpose	Move a (Step 2)
This study uses the approach of Research and Development at the stage of product development.	Method	Move a (Step 3)
The focus of this research is the development of a living values education-based civic education textbook at junior high school level in Bandung, Indonesia.	Reference to research purpose	Move 3 (Step 1)
The research resulted in the conceptual model and outline of a living values education-based civic education textbook, integration of living values education into a civic education textbook, and test results of a limited number of students.	Reference to main research procedure and outcome	Move 3 (Step 2)
Research was undertaken in Bandung and West Bandung Regency, West Java, Indonesia. Subjects were students and teachers at junior high schools that serve as pilot sites for the implementation of the Curriculum of 2013, i.e., SMPN 2 Bandung, SMPN 5 Bandung, and SMPN 1 Lembang.	Indicating source of data	Move 4 (Step 1)
Data collection instruments used in this study include (1) an observation/ participation sheet, (2) documentation study, (3) interviews, and (4) questionnaire.	Indicating data collection procedure	Move 4 (Step 4)
To find out the aspects of the understanding of the content and development of character, after using the textbook, a test was administered to examine the learners' understanding and attitudes. Aspects of understanding and development of character are presented in Table 1.	Stating specific findings	Move 7 (Step 4)
The above table shows that the learners have good skills in understanding the material and the living values. In the aspect of understanding of the material according to the 2013 curriculum, the learners have the best ability in understanding the facts and living values.	Interpreting results	Move 8 (Step 1)
The results of this study are explainable in the following pointers: First, LVE- based textbooks serve as a primary source of knowledge for students....	Stating a specific outcome	Move b (Step 1)
Textbooks have big power to change the brain, especially that of the student. They also affect students' knowledge and values. Textbook writing should, therefore, be thoroughly organized.	Interpreting the outcome	Move b (Step 2)

Considering that the communicative purposes' moves and steps were coded based on subjective observations, this study used an inter-coder to increase data reliability. The coders were two lecturers with backgrounds in linguistics and experts in move analysis. First, the researcher independently coded and defined the rhetorical moves of the RAs. Then, the coders were involved to cross-check several moves and steps patterns. The disagreement and ambiguity of coding results were tackled by conducting a

follow-up discussion to determine which labels were more representative to be used.

RESULTS AND DISCUSSION

A total of 16 English RAs from the fields of hard and soft sciences were analyzed using a modified model of Maswana et al.'s (2015) in this study, in which each discipline contributed eight RAs. The results for each section that has been analyzed will be explained in its own sub-section.

Abstract

Table 3. *Featuring of moves and steps in the abstract section*

Move/Step	Soft Science (N=8)		Move/Step	Hard Science (N=8)	
<i>Move a: Abstract</i>	Featuring	Percentage	<i>Move a: Abstract</i>	Featuring	Percentage
a1 Background of research	2	25%	a1 Background of research	1	12,5%
a2 Purpose	8	100%	a2 Purpose	7	87,5%
a3 Methods	8	100%	a3 Methods	8	100%
a4 Results	8	100%	a4 Results	8	100%
a5 Conclusion	3	37,5%	a5 Conclusion	5	62,5 %

Summary from the analysis of the manifested moves and steps in the abstract section is shown in Table 3. Results revealed similar general tendencies in the two disciplines. For both groups of abstracts, Move a3 and Move a4 were the most frequent to occur in all RAs. Whereas, Move a2 was present in all soft sciences RAs. However, there was only one research article in hard sciences that did not include Move a2. In general, each cycle of moves and steps generally follows the presentational order in Table 2. For example, if Move a1 is absent, then Move a2 is the first element in the cycle, followed by Move a3, and so on.

As shown in Table 3, the most frequent patterns include P-M-R. This is in accordance with the research of Harisbaya et al. (2023). Despite having a different label, the moves serve the same purpose. They found the move “P-M-Pr” pattern was the most frequently used. Similar findings were also found in Nurcik et al. (2022) and Kurniawan et al. (2019) studies, which discovered that Move a, Step 2, 3, and 4 were the most frequent moves to occur in the abstract section. Moreover, the most unique pattern of moves was found in some of the hard science RAs. It was often difficult to determine whether a given communication purpose was meant to be a result, purpose, or method of the study. This phenomenon is consistent with prior study (Hafidzoh & Hardjanto, 2019) where in some cases, there are some moves that are difficult to distinguish from one another; however, these moves can be recognized by their topics. For

instance, while the move may not explicitly use the words "procedure" or "methods," it may still be classified as Move a3 if it contains information on procedures.

Example 1: Move a, Step 2: An anatase titania particle with a honey-comb-like pore structure (200 nm-pore size) and a controllable outer diameter (0.2–1 μm) was successfully prepared using a spray-drying method. Move a, Step 3: As a precursor, an anatase nanoparticle (5 nm) and a polystyrene particle (200 nm) were used as a titania source and a colloidal template, respectively. The outer diameter could be controlled by varying the precursor concentration. Move a, Step 4: The photocatalytic performance of a porous particle was faster than that of a dense particle (with a similar outer diameter). [RA 1, hard sciences discipline]

Moreover, Move a1 was the most infrequent move to be seen in both groups. This pattern suggests that some of the authors chose to introduce the discussed subjects in a general way rather than making a clear case for the significance of their research. Another reason may be due to the length constraint for the abstract section, in some cases, authors may choose to exclude the background or evaluation. This provides them more space to describe the methodology and main findings, which are the two most crucial components of an abstract (Fang, 2021).

Introduction

Table 4. *Featuring of moves and steps in the introduction section*

Move/Step	Soft Sciences (N=8)		Move/Step	Hard Sciences (N=8)	
<i>Move 1: Presenting background information</i>	Featuring	Percentage	<i>Move 1: Presenting background information</i>	Featuring	Percentage
11 Reference to established knowledge in the field	8	100%	11 Reference to established knowledge in the field	8	100%
12 Reference to main research problems	5	62,5%	12 Reference to main research problems	5	62,5%

<i>Move 2: Reviewing related research</i>			Featuring	Percentage	<i>Move 2: Reviewing related research</i>			Featuring	Percentage
21	Reference to previous research	to	6	75%	21	Reference to previous research	7	87,5%	
22	Reference to limitations of previous research	to	0	0%	22	Reference to limitations of previous research	4	50%	
<i>Move 3: Presenting new research conducted by the author(s)</i>			Featuring	Percentage	<i>Move 3: Presenting new research conducted by the author(s)</i>			Featuring	Percentage
31	Reference to research purpose	to	8	100%	31	Reference to research purpose	7	87,5%	
32	Reference to main research procedure and outcome.	to	7	87,5%	32	Reference to main research procedure and outcome.	5	75%	

From the table above, the authors from both fields used all three moves for the introduction section. While at first glance the two groups identified appear to have common use of moves and steps, a closer examination of the lists revealed that there were slight differences in how the authors manifested the moves and steps between the two.

In both groups, the authors tended to use Move 1 the same way. They first introduce the reader to the research area, establish its importance, and provide relevant background information. The results somewhat similar to Afrizon et al.'s (2018) study where it was showed that Move 1 (Establishing A Territory) was dominantly used to give the phenomena of the field discussed. Below is an example of the move.

Example 2: Move 1, Step 1: Learning as a core activity in higher education should not only be oriented towards the achievement of scientific competence, but also, more importantly, it should contribute to the development of character of the younger generation [...] Move 1, Step 2: Among the three components of civic competence, the teaching material often overlooks the achievement of the civic disposition component because the material is too oriented to the scientific development of specific disciplines (Somantri, 2001; Kerr, 1999). Therefore, the values need to be integrated in the teaching materials within the framework of development of students' civic disposition. [RA 10, soft sciences disciplines]

Moreover, half of the hard sciences RAs used Move 2, Step 2. This is different with soft sciences RAs, where it was nowhere to be found. Move 2, Step 2 in soft science RAs was not as frequently used. It shows that many authors did not review previous studies and more focused on their own research. Therefore, it is clear that this move was infrequently used (Afrizon et al., 2018;

Indrian & Ardi, 2019). Meanwhile, the cyclical patterning of Move 2 was quite common in the hard sciences RAs, indicating that the study being presented is intricate, taking into account numerous gaps in earlier research.

Example 3: Move 2, Step 1: A promising method (using a polymer sphere as the template) was reported by Tang et al. Move 2, Step 2: however, the material was in a film form and seemed difficult to manage, especially given the limited resources of most waste treatment plants. Move 2, Step 1: Klein et al. [18] have reported the synthesis of a titania porous particle, which has the best prospect for industrial application. Move 2, Step 2: However, the particle size is more than 10 μm with a large-size distribution and a material performance that is yet to be explained. [RA 1, hard sciences discipline]

Not only Move 3 was frequent almost in every hard sciences RAs; it was also frequent almost in soft sciences RAs. What makes them different is how the authors manifested the move. Move 3 was commonly recycled by one of the authors from the soft sciences discipline. Below is a sample of recycling step 3.

Example 4: (Introduction section) Move 3, Step 1: Therefore, based on the previous description, researcher is interested in studying on foreign tourists attitude for the development of tourism in Medan. This needs to be studied to determine the government's performance in succeeding tourism program. Move 3, Step 2: By knowing the foreign tourists attitude, the government can develop a tourism policy which is used as a factor that can influence the attitude of tourists visiting to Medan. Government especially the Cultural and Tourism Agencies can also use this attitude measurement as an indicator of the success of the existing tourism development in Medan. (Lit. review section) Move 3, Step 2:

Related to this study, the Fishbein model is used to measure the attitude of foreign tourists based on the beliefs of tourists and attributes in the element of tourism development in Medan. The research model used will be described in the following figure. [RA 13, soft sciences discipline]

The fact that there are multiple names for the opening part may be the cause of the cyclicity in Move 3. For instance, a heading labeled

“literature review” appears after a heading labeled “introduction.” As Fang (2021) stated, sometimes researchers are required to create distinct parts for their theoretical frameworks and literature reviews. As a result, Move 3 is reiterated by the author in a different section.

Methods

Table 5. *Featuring of moves and steps in the methods section*

Move/Step	Soft Science (N=8)		Move/Step	Hard Science (N=8)	
<i>Move 4: Identifying source of data and method adopted in collecting them</i>	Featuring	Percentage	<i>Move 4: Identifying source of data and method adopted in collecting them</i>	Featuring	Percentage
41 Indicating source of data	5	62,5%	41 Indicating source of data	1	12,5%
42 Indicating data size	7	87,5%	42 Indicating data size	1	12,5%
43 Indicating criteria for data collection	2	25%	43 Indicating criteria for data collection	0	0%
44 Indicating data collection procedure	8	100%	44 Indicating data collection procedure	3	37,5%
45 Providing background details about the study is going to analyze	4	50%	45 Providing background details about the study is going to analyze	2	25%
<i>Move 5: Describing experimental procedures</i>	Featuring	Percentage	<i>Move 5: Describing experimental procedures</i>	Featuring	Percentage
51 Identifying main research apparatus	0	0%	51 Identifying main research apparatus	5	62,5%
52 Recounting experimental process	0	0%	52 Recounting experimental process	7	87,5%
53 Indicating criteria for success	0	0%	53 Indicating criteria for success	0	0%
<i>Move 6: Describing data analysis procedures</i>	Featuring	Percentage	<i>Move 6: Describing data analysis procedures</i>	Featuring	Percentage
61 Defining terminologies	0	0%	61 Defining terminologies	1	12,5%
62 Indicating process of data classification	7	87,5%	62 Indicating process of data classification	0	0%
63 Identifying (analytical) instrument and procedure	3	37,5%	63 Identifying (analytical) instrument and procedure	2	25%
64 Indicating modification to instrument and procedure	3	37,5%	64 Indicating modification to instrument and procedure	0	0%

The methods section includes a variety of headings and subheadings. Some of the articles in both groups had a “materials and methods”

section; some articles, especially in hard science RAs, used a more specific name for the “materials and methods” or “Experimental method” section

(Maswana et al., 2015), such as “Problem Formulation”, and “Design and Implementation of the Process Control Laboratory Kit”.

As shown in Table 5, there was a clear distinction between the two groups. While authors from hard sciences discipline tended to use Move 4, 5, and 6; authors from soft sciences discipline only used Move 4 and 7. This could be due to the disciplinary convention because ‘hard’ and ‘soft’ science discourse communities have their own variations (Kashiha & Marandi, 2019). In addition, according to the results of research from Sheldon (2018), authors also have different target language and target audience. Authors seeks to establish interpersonal contact with their readers and guide them through the text. Furthermore, the rare use of experimentation in soft sciences RAs is also another factor authors not using Move 5. Therefore it is abundantly evident that there was no occurrence of the use of Move 5 in all soft sciences RAs.

Example 5: Move 4, Step 5: This is an exploratory research where it explores and analyzes the influence of website navigation design, as a part of ICT, to decide to use. It also describes those two variables to get more information on what is perceived by the respondents. Move 4, Step 4: Data collected through literature study, observation and also by giveaway questionnaires. Questionnaires in this study are divided into three parts [...] Move 4, Step 2: There are 125 corporates as our respondents. Move 4, Step 3: The reason why we were chosen as the sample of this study is because most off road adventure service provider consumers are from the company, not a direct individual consumer. [RA 15, soft sciences discipline]

Moreover, at the step level of move 4, it can be seen that the appearance of all steps was more frequent in soft sciences RAs in which the authors manifested them. In applying Move 4, the authors from soft sciences discipline are more explicit in

stating the details and procedures of their study. Meanwhile, in hard sciences RAs, Move 4 appeared in only some of the RAs out of the whole corpus. This indicates that different study designs necessitate describing and delineating various methodological matters, which may lead to the adoption of various move structures in RAs (Chuang & Chen, 2021).

Example 6: Move 5, Step 2: In the experimental procedure, first, a mixed solution was prepared by dissolving and heating 0.1 g CTAB in 30 ml of aqueous solution at 60 °C in three-necked flask reactor [...] Move 5, Step 1: The morphology and particle size of the prepared mesoporous silica nanoparticles were characterized using a scanning electron microscope (SEM, S-5000 and S-5200, Hitachi, Tokyo, Japan, operated at 20 kV) [...] [RA 3, hard science disciplines]

As opposed to the soft sciences RAs, Move 5 appeared in almost every hard sciences RAs. This move serves to outline the experimental methods. The tools used and the explanations for their applications are included in this move as well. Therefore, the numerous kinds of experiments or studies carried out in a single sub-discipline may provide an explanation for the applications of Moves 4, 5, and 6 (Maswana et al., 2015).

Example 7: Move 6, Step 3: Qualitative data analysis is carried out through the following steps: (1) data reduction by summarizing reports, noting the key points that are relevant to the research focus; [...] [RA 12, soft science disciplines]

Since Maswana et al.’s modified framework only serves as a reference for the engineering research, Move 6, Step 3 is revised to ‘*Identifying (analytical) instrument and procedure*’ for soft sciences RAs. This is because no research in the field of soft sciences requires analytical instruments and/or procedures.

Results

Table 6. Featuring of moves and steps in the results & discussion section

Move/Step	Soft Science (N=8)		Move/Step	Hard Science (N=8)	
<i>Move 7: Reporting results</i>	Featuring	Percentage	<i>Move 7: Reporting results</i>	Featuring	Percentage
71 Restating data analysis procedures	3	37,5%	71 Restating data analysis procedures	2	25%
72 Restating research questions	6	75%	72 Restating research questions	1	12,5%
73 Stating general findings	8	100%	73 Stating general findings	0	0%
				8	100%

74 Stating specific findings			74 Stating specific findings		
<i>Move 8: Commenting on results</i>	Featuring	Percentage	<i>Move 8: Commenting on results</i>	Featuring	Percentage
81 Interpreting results	7	87,5%	81 Interpreting results	6	75 %
82 Comparing results with previous studies	2	25%	82 Comparing results with previous studies	2	25%
83 Evaluating results (or research)	0	0%	83 Evaluating results (or research)	3	37,5%

As for the “results and discussion” section, one of the hard sciences RAs used an alternative functional heading called “Problem Solution”. This is because in science and technology, particularly in the discipline of engineering, the usage of non-explicit title names is common and is frequently used (Maswana et al. (2015); Gao & Pramoolsook (2021)).

Discussion and Results may occasionally be included in the same section. This is particularly true if the results are sparse or if the author likes to present and interpret one group of results at a time before going on to present and interpret the next set of results (Fang, 2021). This is the case for all of hard sciences RAs examined, in which all authors present the data and then immediately discuss them. This is also quite common to be found across all research designs (Kurniawan & Lubis, 2020).

As opposed to some of the soft science RAs, which applied a stand-alone R&D section with specific subheadings for the results section, meaning only the information obtained from the data that has been collected and examined is in the Results section. Meanwhile, comments or interpretations regarding the importance of the results are presented in the Discussion section.

Example 8: Move 7, Step 4: Table 3 also shows that the estimation results for all research variables has coefficient values (CR) above the minimum limit of 0.70. Move 8, Step 1: This means that the indicators of all variables were reliable in measuring each variable in this study. Therefore, it can be concluded that the measurement model meets the criteria for the congeneric measurement model [...] Move 7, Step 4: The parameter estimation results of the structural model of this research model with a sample of 411 participants are presented in Table 4. Move 8, Step 1: It provides information that the results of the significance test for the estimated path coefficients for variables have a significant probability value [...] [RA 16, soft science discipline]

Although it was quite difficult to differentiate between general findings (Move 7, Step 3), and specific findings (Move 7, Step 4). The results showed that both groups significantly used Move 7, Step 4. Most of them were distinguished by using figures or tables to present the specific results and clarify the results reported (Fang, 2021). The highly used of Move 7 is in line with Suherdi et al.’s (2020) study. In addition, Move 7, Step 4 and Move 8, Step 1 was highly cyclical and frequent in hard science RAs (Maswana et al., 2015). However, it was also common in soft science RAs (Suherdi et al., 2020).

Example 9: Move 7, Step 4: Fig. 1 shows SEM images of the particles prepared using the spray-drying method [...] Move 8, Step 1: From analysis of the SEM image, we know that the pore diameter corresponded to the original size of the PSL, which suggests further investigation into the control of pore size by simply adjusting the PSL size [8]. Therefore, we concluded that the PSL particles were arranged inside the particle, and then were removed completely, leaving holes in the particles. Move 8, Step 3: The size of the titania nanoparticle (d) and diameter of the PSL sphere (D) are considered and denoted as $d = \frac{2}{3}\sqrt{3} D$. With this equation, for 5 nm titania particles, the PSL spheres must be at least 32 nm to create a good titania/PSL arrangement in the particle. Therefore, a PSL of about 200 nm resulted in a good pore structure. Move 8, Step 2: Consistent with our previous study, the outer diameter was defined by the precursor concentration [21] [...] [RA 1, hard science discipline]

Unlike the soft science RAs which did not use Move 8, Step 3, hard science RAs, on the other hand, used this move and step in a particular order. For example, after stating the specific result (Move 7, Step 4), the authors tended to comment on the results (Move 8) by using Step 1 (Interpreting results); they usually explained why they found what they found, and then some of them continued using Step 3 (Evaluating results (or research)) in that order. Furthermore, some

articles compared their results with earlier studies (step 2). The results are somewhat similar to research conducted by (Ulya, 2022), where the Step 3 also does not appear much in the research article discussions.

Discussion (conclusion)

Table 7. Featuring of moves and steps in the conclusion section

Move/Step	Soft Science (N=8)		Move/Step	Hard Science (N=8)	
<i>Move 9: Stating the main results and significance</i>	Featuring	Percentage	<i>Move 7: Stating the main results and significance</i>	Featuring	Percentage
91 Stating the main results and significance	8	100%	91 Stating the main results and significance	6	75%
<i>Move b: Explaining specific research outcomes</i>	Featuring	Percentage	<i>Move b: Explaining specific research outcomes</i>	Featuring	Percentage
b1 Stating a specific outcome	8	100%	b1 Stating a specific outcome	3	37,5 %
b2 Interpreting the outcome	7	87,5%	b2 Interpreting the outcome	4	50%
b3 Indicating significance of the outcome	4	50%	b3 Indicating significance of the outcome	3	37,5%
b4 Contrasting present and previous outcomes	1	12,5%	b4 Contrasting present and previous outcomes	0	0%
b5 Indicating limitations of outcomes	2	25%	b5 Indicating limitations of outcomes	1	12,5%
<i>Move c: Stating research conclusions</i>	Featuring	Percentage	<i>Move c: Stating research conclusions</i>	Featuring	Percentage
c1 Indicating research implications	4	50%	c1 Indicating research implications	5	62,5%
c2 Promoting further research	2	25%	c2 Promoting further research	1	12,5%

All RAs examined only used the ‘Conclusion’ heading as the closing section. However, in some of the articles where the R&D sections were combined, there are several steps in the conclusion section, especially move b, which are integrated with Move 7 and 8 in the result section (Maswana et al., 2015). This, however, does not imply that the Discussion and Conclusion sections are essentially the same. While the conclusion concentrates more on summarizing overall outcomes and evaluating the study, the Discussion spends more on commenting on individual results. Below are the examples of the use of these moves.

Example 10: (R&D section) Move 7, Step 4 & Move b, Step 1: The results indicate that the reputation of the university positive and significantly influences the student’s decision to choose a study at faculty economics UISU. It indicated from t test result that is 8,204. [RA 14, soft science discipline]

(R&D section) Move 8, Step 2: A similar result was obtained by [32] which mentioned that the most significant motive for hiking was “spending time with friends”. Hikers desired to appreciate natural environment and escape from day by day life and to pursue intimacy [...] Move b, Step 4: However different studies demonstrated different outcome. In the investigation by [10], relaxation was positioned the first in terms of significance, while learning and sociality was rank the second, followed by achievement and independence and personal development respectively. [RA 16, Soft science discipline]

Despite the inclusion of some moves and steps mentioned above, most of the authors in both groups used Move 9 to conclude their articles by highlighting the main results and significance of the study. In several hard science RAs, one author did not state the main results and their significance, but directly stated the implications of the research by using Move c, Step 1.

Example 11: Move 9, Step 1: In summary, mesoporous particles (Hiroshima Mesoporous Material (HMM)) with controllable pore size (4–15 nm) and outer diameter (20–80 nm) were successfully prepared in a water/oil phase using an organic template method. [RA 3, hard science discipline]

Move c, Step 1: The result showed that this kit can be used for a tool for improving student comprehension in the control process in the realistic application in industry. [RA 7, hard science discipline]

Both groups also showed a general tendency of using move b. Furthermore, at the step level, authors from soft sciences discipline highly used step 1 and step 2. This is very contrast to the hard science RAs, though it was very common to be found in Maswana et al.'s (2015) findings. However, half of the entire corpus, both soft and hard sciences RAs, used step 3 to indicate the significance of the outcome. This can be taken to suggest that the researchers are trying to strengthen the credibility of their ideas by highlighting the importance of their studies, thereby making them reputable researchers in their own discipline.

Example 12: Move b, Step 3: This study provides the significance of how sports tourism can be improved by the use of website design that provides useful navigation for this tour [...] [RA 15, soft science discipline]

Moreover, the use of move c in hard sciences RAs is in line with Gao & Pramoolsook's (2021) study who found that only a few of the RAs studies used the move c, but none on Ulya's (2022) study. The findings also showed that step 2 in move c occurred less frequently than step 1. This contrasts with the results of Alkamillah et al. (2022) where authors prefer to mention the potential areas for future research of the study rather than drawing pedagogic implications in deduction of their research.

CONCLUSION

In summary, this research aims to seek out the rhetorical organization of full-length English RAs in the field of soft sciences and hard sciences written by reputable Indonesian authors in the early stage of their careers. The results revealed a general tendency with slight differences in how the authors applied the moves and steps throughout sections. The striking difference is seen in how the authors from both groups manifested Move 5 in the method section. However, the distinction could be because of the

disciplinary conventions and the nature between the hard and soft sciences disciplines. This indicates that one needs to be cognizant of certain discipline conventions when preparing research articles for international publication.

Despite the fact that the corpus size is small and the findings cannot be generalized to all RAs nor academic authors. Novice writers or early-academics can benefit these findings to increase their awareness of rhetorical structure as they captured important textual variation at the level of moves and steps between disciplines. However, further research using more data is recommended as it can provide more clarity on how highly reputable authors rhetorically structure their articles in terms of moves and steps. This can be accomplished by adding more sub-disciplines for the hard and soft sciences disciplines.

Lastly, this research offers practical implications such as useful educational materials that can help students or scholars to improve their academic writing skills. The findings will assist students or inexperienced writers to write an "excellent" research article. It can also be beneficial for novice writers who are unfamiliar with a genre by introducing them to the conventions of the texts and structures of scientific discourse, and it can help establish precise learning goals and acts as a starting point for novice's comprehension and their usage of genre.

REFERENCES

- Afrizon, E., Arsyad, S., & Zahrida. (2018). A discourse analysis of rhetorical style in research article introduction in law studies written by international authors. *Journal of English Education and Teaching*, 2(4), 84-102. <https://doi.org/10.33369/jeet.2.4.84-102>
- Alkamillah, M., Azwandi, & Maisarah, I. (2022). Conclusion sections in applied linguistics international journal articles written by Indonesian authors. *Journal of Applied Studies in Language*, 6(2), 118-130. doi.org/10.31940/jasl.v6i2.543
- Amnuai, W. (2019). Analyses of Rhetorical Moves and Linguistic Realizations in Accounting Research Article Abstracts Published in International and Thai-Based Journals. *SAGE Open*, 9(1), 1-9. <https://doi.org/10.1177/2158244018822384>
- Bailey, S. (2021). *Academic writing for university students* (1st ed.). Routledge.
- Cargill, M., & O'Connor, P. (2021). *Writing scientific research articles: strategy and steps* (3 ed.). John Wiley & Sons.

Athirah Jihan Khairani, Eri Kurniawan, & Arif Husein Lubis

A comparative move analysis of inter-disciplinary research articles written by reputable Indonesian authors throughout their early-career period

- Ceylan, N. O. (2019). Student perceptions of difficulties in second language writing. *Journal of Language and Linguistic Studies*, 15(1), 151-157. doi.org/10.17263/jlls.547683
- Chuang, W., & Chen, C.-C. (2021). Move structures and cognitive genres in the methods sections of experimental research articles and corpus-based studies in applied linguistics. *International Journal of English Linguistics*, 11(1), 10-21. doi.org/10.5539/ijel.v11n1p10
- Cotos, E., Huffman, S., & Link, S. (2017). A move/step model for methods sections: Demonstrating Rigour and Credibility. *English for Specific Purposes*, 90-106. doi.org/10.1016/j.esp.2017.01.001
- Ebadi, S., Salman, A. R., Nguyen, T. T., & Weisi, H. (2019). Rhetorical structure variations in abstracts and introductions of applied linguistics master's theses by Iraqi and international students. *Iranian Journal of Language Teaching Research*, 7(1), 101-117. https://doi.org/10.30466/ijltr.2019.120635
- Fang, Z. (2021). *Demystifying academic writing: Genres, moves, skills, and strategies*. Routledge.
- Gao, S., & Pramoolsook, I. (2021). Move-step structure of the results and discussion section of electronic engineering research articles written by chinese and thai researchers. *The Journal of Teaching English for Specific and Academic Purposes*, 9(4), 725-739. https://doi.org/10.22190/JTESAP2104725G
- Hafidzoh, K., & Hardjanto, T. D. (2019). Discourse patterns of applied linguistics research article abstracts in English. *3rd English Language and Literature International Conference (ELLiC)*, 3, pp. 356-361. Semarang: Faculty of Foreign Language and Culture Universitas Muhammadiyah Semarang.
- Harisbaya, A. I., Kurniawan, E., & Lubis, A. H. (2023). Authors' affiliation influence towards rhetorical moves and linguistic features of rejected RAAs. *ENGLISH REVIEW: Journal of English Education*, 11(1), 171-182. https://doi.org/10.25134/erjee.v11i1.7579
- Hollywood, A., McCarthy, D., Spencely, C., & Winstone, N. (2020). 'Overwhelmed at first': the experience of career development in early career academic. *Journal of Further and Higher Education*, 44(7), 998-1012. https://doi.org/10.1080/0309877X.2019.1636213
- Indrian, R. D., & Ardi, P. (2019). Rhetorical structures of english-major undergraduate thesis introduction chapters. *Indonesian Journal of EFL and Linguistics*, 4(2), 195-214. https://doi.org/10.21462/ijefl.v4i2.166
- Kashiha, H., & Marandi, S. (2019). Rhetoric-specific features of interactive metadiscourse in introduction moves: A case discipline awareness. *Southern African Linguistics and Applied Language Studies*, 37(1), 1-14. https://doi.org/10.2989/16073614.2018.1548294
- Kaya, F., & Yağız, O. (2020). Move analysis of research article abstracts in the field of ELT: A comparative study. *Journal of Language and Linguistic Studies*, 16(1), 390-404. https://doi.org/10.17263/jlls.712854
- Kent, A., Berry, D. M., Budds, K., Skipper, Y., & Williams, H. L. (2017). Promoting writing amongst peers: establishing a community of writing practice for early career academics. *Higher Education Research & Development*, 36(4), 1-14. https://doi.org/10.1080/07294360.2017.1300141
- Kurniawan, E., & Lubis, A. H. (2020). A comparative move analysis on the qualitative and quantitative findings and discussion sections written by EFL undergraduate students. *The Asian ESP Journal*, 16(6.1), 137-162.
- Kurniawan, E., Lubis, A. H., Suherdi, D., & Danuwijaya, A. A. (2019). Rhetorical organization of applied linguistics abstracts: Does scopus journal quartile matter? *GEMA Online*, 19(4), 184-202. https://doi.org/10.17576/gema-2019-1904-10
- Lu, X., Yoon, J., & Kisselev, O. (2021). Matching phrase-frames to rhetorical moves in social science research article introductions. *English for Specific Purposes*, 61, 63-83. https://doi.org/10.1016/j.esp.2020.10.001
- Lubis, A. H. (2019). The argumentation structure of research article 'findings and discussion' sections written by non-native English speaker novice writers: A case of Indonesian undergraduate students. *Asian Englishes*, 22(2), 143-162. https://doi.org/10.1080/13488678.2019.1669300
- Luthfianda, S. N., Kurniawan, E., & Gunawan, W. (2021). Rhetorical structures of introductions in soft and hard science international journals written by Indonesian scholars. *Journal of English Language Teaching and Linguistics*, 6(2), 343-358. https://doi.org/10.21462/jeltl.v6i2.563
- Maswana, S., Kanamaru, T., & Tajino, A. (2015). Move analysis of research articles across five engineering fields: What they share and what they do not. *Ampersand*, 1-11. https://doi.org/10.1016/j.amper.2014.12.002
- Moreno, A. I., & Swales, J. M. (2018). Strengthening move analysis methodology towards bridging the function-form gap. *English for Specific Purposes*, 50, 40-63. https://doi.org/10.1016/j.esp.2017.11.006
- Nenotek, S. A., Tlonaen, Z. A., & Manubulu, H. A. (2022). Exploring university students'

- difficulties in writing English academic essay. *Al-Ishlah: Jurnal Pendidikan*, 14(1), 909-920. <https://doi.org/10.35445/alishlah.v14i1.1352>
- Nurcik, A. B., Kurniawan, E., & Lubis, A. H. (2022). Rhetorical moves analysis on scopus-indexed research article abstracts by national and international authors. *English Review: Journal of English Education*, 10(2), 349-358. <https://doi.org/10.25134/erjee.v10i2.6235>
- Nwogu, K. N. (1997). The medical research paper: Structure and functions. *English for Specific Purposes*, 16(2), 119-138. [https://doi.org/10.1016/S0889-4906\(97\)85388-4](https://doi.org/10.1016/S0889-4906(97)85388-4)
- Rabie, H., & Boraie, D. (2021). The rhetorical structure of literature reviews in Egyptian-authored English research articles in linguistics. *Asian Social Science and Humanities Research Journal (ASHREJ)*, 3(1), 55-72. <https://doi.org/10.37698/ashrej.v3i1.63>
- Salager-Meyer, F. (1990). Discoursal flaws in medical English abstracts: A genre analysis per research- and text-type. *Text - Interdisciplinary Journal for the Study of Discourse*, 10(4). <https://doi.org/10.1515/text.1.1990.10.4.365>
- Salager-Meyer, F. (1992). Salager-Meyer F. A text-type and move analysis study of verb tense and modality distribution in medical English abstracts. *English for Specific Purposes*, 11(2), 93-113. [https://doi.org/10.1016/S0889-4906\(05\)80002-X](https://doi.org/10.1016/S0889-4906(05)80002-X)
- Sheldon, D. E. (2018). Knowledge construction of discussion/conclusion sections of research articles written by English L1 and L2 and Castilian Spanish L1 writers. *Journal of English for Academic Purposes*. <https://doi.org/10.1016/j.jeap.2018.11.002>
- Suherdi, D., Kurniawan, E., & Lubis, A. H. (2020, May). A genre analysis of research article 'findings and discussion' sections written by Indonesian undergraduate EFL students. *Indonesian Journal of Applied Linguistics*, 10(1), 59-72. <https://doi.org/10.17509>
- Swales, J. (1990). *Genre analysis: English in academic and research settings*. Cambridge University Press.
- Ulya, S. (2022). Rhetorical moves variations of research article discussion sections published in reputable journals. *Premise: Journal of English Education and Applied Linguistics*, 11(3), 632-645. <https://doi.org/10.24127/pj.v11i3.5615>
- Ye, Y. (2019). Macrostructures and rhetorical moves in energy engineering research articles written by Chinese expert writers. *Journal of English for Academic Purposes*, 38(1), 48-61. <https://doi.org/10.1016/j.jeap.2019.01.007>

Athirah Jihan Khairani, Eri Kurniawan, & Arif Husein Lubis

A comparative move analysis of inter-disciplinary research articles written by reputable Indonesian authors throughout their early-career period