

The Rhetorical Moves of Abstracts Written by the Authors in the Field of Hard Sciences

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ABSTRACT

Academicians are required to publish international journals which abstract written in English and their native language; however, writing in English for non-native English speakers is not easy. There are some issues that are faced by academicians regarding abstracts writing, such as different writing style, different culture, and different mother language. This study aims to discover the authors' abstracts in terms of moves, steps, also the linguistic features. Eight data abstracts were collected for this research. Qualitative analysis used Hyland's (2000) theory for analyzing each move of the abstracts: Introduction, Purpose, Method, Product, and Conclusion (I-P-M-Pr-C). The findings show dominant and least rhetorical moves used by hard science field academicians and linguistic features that are realized to support the rhetorical moves. The conclusions serve as a future reference for those interested in discourse analysis, cross-cultural abstracts, and research publication purposes.

Keywords: *Abstract writing, discourse analysis, rhetorical moves, international publication*

1. INTRODUCTION

Research articles are a form of writing that contains systematic reports regarding the results of studies which have been conducted by the researchers. Conducting research can have a positive impact on science, including being used as a reference. In the current era, the number of research articles released in international publication can indicate the position of the development and advancement of science and technology in a country. Researchers from various fields in different countries are competing to conduct research in order to advance science. Therefore, writing research articles holds an important part in the advancement of science for society.

One activity that should be done by academicians in writing journal article is to represent their research in a short brief way. In representing their research in a brief way, they should make a good abstract. Abstract is the shortest part of journal that is positioned at the beginning of journal article and is a factor whether a journal article is interesting and meeting the requirements of the author's guidelines. Other than that, abstract is considered as the "face" of the research article since readers tend to read the abstract first before

reading the article completely. The competence to compose the abstract of a scientific report (RA) efficiently becomes particularly necessary as it is expected to be written in international and reputable journals (Kurniawan, Lubis, Suherdi, & Danuwijaya, 2019). The globalization of the academic world has made English the dominant language of science communication, according to Donesch-ježo (2016), who has undertaken cultural disciplinary abstract analysis. Consequently, this language is an instrument for scientists to present their successes and to achieve global recognition. Researchers who wish to publish in an international community and with global readership need to be constantly aware of cross-linguistic and cross-cultural variations in the structure of their writing conventions of this type of the research article structure. In publishing RAs in global publications, Polish writers face difficulties as they have diverse writing styles and multiple linguistic features to be applied (Donesch-ježo, 2016). In other papers, such as "Cross Cultural Analysis of Conference Abstracts" (Povolná, 2016), scholars who use Slavonic languages, such as researchers from Slovakia, have found the non-native English speakers in this study Slovakia and Poland did not use the same variety in writing in English. Due to various their

writing habits and language-specific and culture-specific conventions that experts conducting research in various fields of study translate from their local native language to the texts they are expected to produce, writing variants are distinctive. Academics face challenges writing abstract research papers. This is due to the fact that while writers are highly competent in communicating general English, writing RAs can still be difficult due to a lack of knowledge of generic forms especially for novice non-native writers who have to write in English (Amnuai, p. 2, 2019). Also, they may not understand or may not know that there are several rules that must be followed in writing an abstract in order to be considered as an acceptable and standardized abstract.

Moves analysis is a structure of abstract. Swales (1981) developed genre analysis using rhetorical moves to describe the rhetorical motives of research journals. A move refers to a part of a text that performs a particular communicative role. According to a book entitled "Discourse on The Move: Using Discourse Analysis to describe discourse structure" by Biber, Connor, and Upton (2007), not only does each move have its own intent, but it also applies to the genre's general communicative purposes. The goals of the genre are understood by the expert members of the discourse community in genre study, less so by the beginner members, and certainly not by the non-members. The rationale is influenced by these reasons, and the rationale helps establish the limiting conventions. Certain types of movements appear more often in a genre than others and can be classified as conventional, whereas other movements that do not occur as often can be described as optional. Pho (2008) expressed, "each move has its own open reason, which, along with different moves, adds to the overall informative reason for the content" (p. 17). Moves can contain multiple elements that recognize the move together, or in any combination.

Even though the issue regarding hard science abstracts have been analysed in some previous research, the studies regarding the textual evidence of hard sciences in the research article abstract rhetorically is still under-studied. Thus, this study aims to discover the rhetorical moves of Indonesian authors from hard sciences in writing their research article abstracts and linguistic features realized the rhetorical moves. The data were taken from Indonesian authors who attended a workshop. The workshop itself was held for two days by the researcher and team to discuss ways of writing abstracts that are acceptable and suitable to standards for international publishing. Hwang, Shu, Nguyen, and Su (2017) stated that in general, the number of RAs on genre analysis of abstracts of science and technology RAs is still small in comparison with those in social sciences RAs. This study is conducted to answer these following questions:

1. What are the rhetorical moves used by the hard science field academicians?
2. What are the linguistic features that are realized to support the rhetorical moves?

2. METHOD

2.1. Research Design

This study was designed as a qualitative study. Particularly, this study employed genre-approach move analysis to analyze the data (Hyland, 2009). The reason is that move analysis can capture the similarities and differences of rhetorical moves manifested in the research article abstracts from hard sciences written by academicians. This method analysis was also used in some previous study regarding rhetorical moves such as Darabad (2016), Hwang et al. (2017), Suntara (2013), and Suherdi, Kurniawan and Lubis (2020). This method also allows the researchers to record move analysis and the linguistic features applied within the academicians's abstracts.

2.2. Data Sources

The main data of this study is a small corpus from eight academicians' abstracts. The academicians are from Faculty of Sports and Health Education, Faculty of Technology and Vocational Skills Education, Faculty of Mathematics and Natural Science Education, Faculty of Economics and Business Education from Universitas Pendidikan Indonesia. The corpus contained 1591 words with an average 198 words for each abstract.

2.3. Data Collection

The data collection process started with collecting academicians' abstracts using Google Form. Then, ask for their permission to use it as data for the analysis to compose this article. After all papers were downloaded, they were stored in a folder to ease the analysis process. Fourth, the researchers extracted the title page along with the abstracts from the full-text article and saved it in a Word file.

2.4. Data Analysis

The move analysis was done through move analysis and to explain Hyland's (2000) revised model of Introduction, Purpose, Method, Product, and Conclusion (I-P-M-Pr-C) as the main analysis model (see table 1). Three student researchers were recruited and assigned a task to analyze one research article abstract each to get them more accustomed with the analysis model.

Table 1. Hyland’s (2000) five-move model

| Move | Step |
|-----------------|--|
| M1 Introduction | S1 Arguing for topic significance |
| | S2 Making topic generalization |
| | S3 Defining key term(s) |
| | S4 Identifying gap |
| M2 Purpose | Stating the research purpose |
| M3 Method | S1 Describing participants/data sources |
| | S2 Describing instrument(s) |
| | S3 Describing procedure and context |
| M4 Findings | Describing the main results |
| | S1 Deducing Conclusion |
| M5 Conclusion | S2 Evaluating the significance of the research |
| | S3 Stating limitation |
| | S4 Presenting recommendation or implication |
| | |

The sentences were the analysis units. To ease the analysis process, each abstract was first broken down into sentences, which were moved to a table. To get familiar with the content, the title and abstract of the paper were read. Afterwards by marking each sentence with a move, the top-down analysis stage was completed. Based on the analysis model, the steps were divided into the appropriate moves. When it is completed, the bottom-up analysis stage was conducted by emphasizing the moves' linguistic characteristics, including verb used, verb tense, and voice of phrase. Last but not least, the experts reviewed the findings of the study to ensure its reliability.

3. FINDINGS AND DISCUSSION

This part of research aims to describe the rhetorical moves of research article abstracts in hard science field. The linguistics realizations that support the rhetorical moves were explained afterwards

3.1. Rhetorical Moves of the Abstracts

This result of the analysis below showed that all abstracts give examples of the five moves model structures. Move 1 Introduction, Move 2 Purpose, Move 3 Methodology, Move 4 Findings, and the last one Move 5 Conclusion.

3.1.1. Move 1 - Introduction

This move occurred 60% in the hard science field abstracts. This move is considered as optional move. This move was aimed to established context for the paper and motives for the research and discussion. In this move, the authors informed topic significance argument, made topic generalization, and identified gap. The authors did not use step 3 for defining key terms. The steps that are used within the hard science field abstracts in Move 1 are step 1, step 2, and step 4 which are arguing for topic significance, making generalization

of the topic the research that they constructed, and identifying gap.

In the last couple of years, software defined technology (SDN) has been massively adopted at telecommunication field. (RA4, Step 2)

MSM face challenges in preventing HIV, including condoms use. (RA8, step 1)

Similar to the previous research that was composed by Kurniawan et al. (2019), the step 3, which is defining key terms is the least step used in move 1.

Table 2. Hard Science Move’s Saliency

| Move Category | Hard Science Move’s Saliency f (%) |
|---------------|------------------------------------|
| Move 1 | 60% |
| Step 1 | 60% |
| Step 2 | 60% |
| Step 3 | 0% |
| Step 4 | 20% |
| Move 2 | 100% |
| Move 3 | 100% |
| Step 1 | 100% |
| Step 2 | 80% |
| Step 3 | 100% |
| Move 4 | 100% |
| Move 5 | 80% |
| Step 1 | 40% |
| Step 2 | 0% |
| Step 3 | 60% |
| Step 4 | 60% |

3.1.2. Move 2 - Purpose

This move occurred for 100% in the hard field abstracts. This move is considered as the obligatory move. This move is functioned to indicate and outlines the intention behind the paper. It is the least move used by the authors of hard science field abstracts.

This study aims to see the effect of using an Elevation Training Mask (ETM) with the High Intensity Interval Training (HIIT) Training Method on physiological abilities based on aerobic capacity. (RA1, Move 2)

The purpose of this study was to investigate and documentation of the barriers to condom use among MSM. (RA8, Move 2)

Move 2 is no further analyzed because move 2 does not have any step. Similar to Kurniawan et al.’s (2019) research article, move 2 is also obligatory move.

3.1.3. Move 3 - Methodology

This move occurred 18 times or about 26% in the hard science field abstracts. The saliency of this move is 100% which makes this move considered as the

obligatory move. This move is intended to provide information for designs, procedures, assumptions, approaches and data. In this move, the authors informed about the participants or data sources, instruments, and also the procedure and context. The dominant steps used within this move are step 1 and step 3 which both occurred 100% for each salience.

This research is an experimental study with a 2x2 factorial design. This study used aerobic and anaerobic physical component test instruments. This study involved 20 female futsal players as participants. Data analysis using statistical calculations with the help of the SPSS application. (RA1, step 3, step 2, step 1, step 3 consecutively.)

The method used is ex-post facto in the sample of early childhood aged four to five years who have attended kindergarten with middle-level socioeconomic status. (RA7, step 3).

In Kurniawan et al.'s (2019) study, step 3 in move 3 is conventional because it occurred for less than sixty-six percent. Another difference is, move 1 in the previous study is only occurred for less than sixty percent and also considered as conventional. In another previous research by Andika, Safnil, and Harahap (2009), which academicians are postgraduate students (PS), national authors (NA), and international authors (IA), move 3 appeared for 90% and the move is considered conventional.

3.1.4. Move 4 – Findings

This move's salience occurred for 100% in the hard science field abstracts. This move is considered as obligatory move. This move is addressed to state the main findings and arguments.

The results of the study found that there was no increase in the physiological abilities of female futsal players based on the use of ETM. (RA1, Move 4)

Age, education, employment status and number of children are factors that influence individual coping strategies. (RA6, Move 4)

Similar to the previous research by Ren (2011) that compares rhetorical moves of abstracts in published research articles and master's foreign-language theses, move 4 occurs for 100%. This move is considered as obligatory move.

3.1.5. Move 5 – Conclusion

This move occurred for 80% within this hard science field abstracts. This move is considered as conventional move. This move is intended to interpret results, draws inferences, points to applications or broader implications. The authors deduced conclusion, evaluated the significance of the research, stated limitation, and

presented recommendation or implication. The dominant step used in this move is step 3 and 4 which are stating limitation and presenting recommendation of implication. The least step used is step 2 which is evaluating the significance of the research.

The results of this study can be used as a consideration for the government to pay attention to nutritional status and motoric abilities of children, in an effort to minimize the gap between the quality of education and the various backgrounds of parents' socio-economic status. (RA7, step 4)

Hopefully, this application can later be employed as a complementary tool in an electronic extracurricular program at the elementary school level because most of the electronic material taught for elementary student contains the introduction of resistors and its applications accompanying with the mathematical expression of the resistor configurations. (RA3, step 4)

In the previous research by Ren (2019), the occurrence of move 5 is 80%, which move is considered as the conventional move.

3.2. Linguistic Realizations of the Moves

This part of the research answered the question of linguistics realizations that support the rhetorical moves such as voice: active and passive; and tenses: past and present.

Table 3. Move's Linguistic Features

| Linguistic Features | | | | | | | |
|---------------------|-----|---------|-----|-------------|-----|---------|-----|
| Voice | | | | Tense | | | |
| Active | (%) | Passive | (%) | Past | (%) | Present | (%) |
| 56 | 78% | 16 | 22% | 31 | 43% | 41 | 57% |
| Total Voice | | | 72 | Total Tense | | 72 | |

The findings showed that the voice that the authors like to use in the abstracts is active voice. Some authors reflect moves and steps more comfortably in active voice. It is proven in some data that the academicians in hard science abstracts comfortable writing in active voice especially in move 1, move 3, and move 5. Regarding, the use of tense, the difference between using past tense and present tense are not really unbalanced. Some authors comfortably used present tense, while the rest used past tense. The dominant present tense used is shown by the author of the abstracts in the move 1 and move 5, which is discussing about the general topic of the abstract and conclusion repetitively. For the past tense, the dominant move that used this is move 3 which is talking about methodology. In the use of present tense, simple present tense, present continuous, present progressive appears. For past tense,

simple past tense, past perfect, and past perfect continuous were used by the authors.

4. CONCLUSIONS

This study has addressed two research questions: What are rhetorical moves that are used by the hard science field academician? What are the linguistic features that are realized to support the rhetorical moves? The findings demonstrate that three moves used by the academicians from hard science field are obligatory regardless of the disciplines. The obligatory moves regarding the salience are Move 2, Move 3, and Move 4. They are all occurred for one hundred percent. Those moves are intended to indicate and outline the intention behind the paper; provide information for designs, procedures, assumptions, approaches and data; and to state the main findings and arguments respectively. For move 5, it is considered as conventional move. This move is intended to interpret results, draws inferences, points to applications or broader implications. The authors deduced conclusion, evaluated the significance of the research, stated limitation, and presented recommendation or implication. Last, move 1 is considered as the optional move. In the step level, the authors from hard science fields have a common interest in using step 1 and step 3 in move 1 which is aimed to describe participants/ data sources and to describe procedure and context consecutively. Regarding the linguistic realizations which support the rhetorical moves, such as active voice, passive voice, present tense, and past tense, active voice, the findings exemplify that there are linguistic features that are mostly used and least used by the authors of hard science. Passive voice only appears for sixteen times from the total of eight abstracts. The most rhetorical moves used to regard of tense is present tense. Actually, there is no large, unbalanced number of the sing of past tense and present tense.

This research contributes to enrich the existing literature in the realm of academic writing for publication purposes. The classification of moves and steps in this paper may be considered as a guideline to help the authors to write their abstract properly. By understanding the characteristics of rhetorical moves, hopefully the authors can compose a better quality of abstracts that correspond with their disciplines' norms and rules. For future research, researchers can investigate the disciplinary variety of the abstracts with a bigger corpus. The small number of corpus in this study may be biased in portraying certain discussion. Thus, it is recommended for future research to conduct the study on various context of data such as disciplines and culture.

ACKNOWLEDGMENTS

This study was supported by a grant from the Research and Community Service Unit, Indonesia University of Education. The authors would like to express appreciation for all the support provided.

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