

Rhetorical Moves and Genre Development Analysis of Hard Science Field Abstracts

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Abstract: Non-native English scholars are expected to publish international journals with abstracts written in English. There are a lot of factors that caused the rejection of journal article publication; one of them is disorganized writing styles. Compared to the native English speakers, the issues regarding disorganized writing styles appeared more in the non-native English speakers' research article since they have different writing styles, cultures, and mother tongues. Abstract Coaching Clinic Workshop was held for Indonesian University of Education (UPI) scholars so that it is hoped that there would be an increase in the quality of composing research article abstracts and an increase in the number of international publications from scholars. The purpose of this research is to uncover rhetorical moves and genre of the abstracts, its genre development, as well as the linguistics features used in the abstracts. Thirty abstracts made by fifteen UPI scholars who were also the participants of the Abstract Coaching Clinic Workshop were collected as the data for the analysis. Hyland's (2000) theory was used to analyze each move and step of the abstracts. The results show the occurrence frequency of each move and step, along with the linguistic features used by the academicians; and the development of their abstract writing from before and after the coaching clinic session. The findings serve as a potential reference for those researchers that are concerned in discourse analysis, cross-cultural abstracts, and research publication needs.

Keywords: abstracts; discourse analysis; genre development; cross-cultural abstracts; move analysis

Gerak Retorika dan Analisis Pengembangan Genre Abstrak Bidang Ilmu Sains

Abstrak: Sarjana bahasa Inggris non-penutur asli diharapkan dapat menerbitkan jurnal internasional dengan abstrak yang ditulis dalam bahasa Inggris. Banyak faktor yang menyebabkan penolakan publikasi artikel jurnal; salah satunya adalah gaya penulisan yang tidak teratur. Dibandingkan dengan penutur asli bahasa Inggris, masalah tentang gaya penulisan yang tidak teratur lebih banyak muncul dalam artikel penelitian penutur asli bahasa Inggris karena mereka memiliki gaya penulisan, budaya, dan bahasa ibu yang berbeda. *Abstract Workshop Coaching Clinic* diadakan bagi para sarjana Universitas Pendidikan Indonesia (UPI) sehingga diharapkan terjadi peningkatan kualitas penulisan abstrak artikel penelitian dan peningkatan jumlah publikasi internasional dari para sarjana. Tujuan dari penelitian ini adalah untuk mengungkap gerak retorika dan genre abstrak, perkembangan genre, serta fitur linguistik yang digunakan dalam abstrak. Tiga puluh abstrak yang dibuat oleh lima belas sarjana UPI yang juga peserta workshop dikumpulkan sebagai data untuk dianalisis. Teori Hyland (2000) digunakan untuk menganalisis setiap gerak dan tahapan abstrak. Hasil penelitian menunjukkan frekuensi kemunculan setiap gerak dan tahapan, serta fitur kebahasaan yang digunakan oleh para akademisi; dan pengembangan tulisan abstrak mereka sebelum dan sesudah sesi *coaching clinic*. Temuan-temuan tersebut menjadi referensi potensial bagi para peneliti yang peduli dengan analisis wacana, abstrak lintas budaya, dan kebutuhan publikasi penelitian.

Kata kunci: abstrak; analisis wacana; pengembangan genre; abstrak lintas budaya; analisis gerak

Introduction

Writing for academic purposes is considered difficult for some non-native English speakers. They must master new style, reference and format norms in the academic writing field. One of the most common academic writings produced by scholars is journal articles. The article should be written on the basis of scientific research. Researchers from various fields and nations compete to conduct research that will advance science. The researchers' primary responsibility is to communicate their research findings to a wider community. For non-native English speakers, they are required to join a wider community, in this case an international community. They can join the community by submitting a manuscript of their study to an international journal. This ensures that other scholars will have access to the studies they work on and will be able to do further research and investigate the issues posed in greater detail in order to advance scientific understanding (Chambers, 1997). Another factor why they have to join the worldwide community is to know what topics the other scholars have previously discussed. In other words, scholars who desire to join the community and publish their work need to grasp the "cutting edge" of their scientific research: the work of the major players on the worldwide platform presently. By joining the community, researchers may read journals in the area where people publish, subscribe to email alerts and enhance their abilities to search the internet and electronic data bases of libraries to which they have access to (Cargill & Patrick, 2012, p. 5). In addition, publishing international research article is beneficial since it has a beneficial impact on the researcher's prosperity, as well as their reputations and institution's recognition (Suherti et al., 2020).

However, getting research article published is a hard process. Publishing article is considered as a challenging process because not all publishers can

publish their work (Cargill & Patrick, 2012). One of many reasons why not all works can be published is the author's style of writing is disorganized and the article is not well arranged (Kotze, 2007). A disorganized writing style problem appears due to the lack of awareness of the steps or organization required to write scientifically. Academics may face a lot of difficulties in producing research articles, such as problems with the use of grammar, word diction and style, as well as the fact that their writing is less structured and poorly formed (Male, 2018). This is directly proportional with the beginning of this background of this study. This research mainly concentrates on disorganized writing styles that result in a poorly structured research article.

Since the focus of this research is about disorganized writing styles, there has been an increased interest in the field of research article abstracts in order to produce a better type of academic and scientific texts (Juanda, 2020). Moreover, an abstract is a brief summary of a research article that appears at the beginning of an academic paper (Darabad, 2016). Thus, an abstract is a key whether the research article should be read further or not (Kurniawan, Lubis, Suherdi & Danuwijaya, 2019). Abstract's primary goal is to assist other researchers and readers in making reading selection decisions. Abstract is perfect for busy readers to save their time to read the whole paper. If the abstract succeeds to captivate the readers then they can download and take their time to read the whole paper. The abstract may be the only information available to readers who have limited access to literature (working outside institutions with full journal subscriptions). The biggest issue with abstracts is that they are often written in such a vague style that they fail to capture the reader's interest (Feldman, 2004).

Like other forms of scholarly writing (thesis, technical study, review

papers, to name a few), abstract has a genre in its own right. Genre based on Hyland's (2000) is described as 'a concept that indicates how authors usually use language to respond to repeated circumstances' "to group text together". In other words, abstract writing has an established and agreed formal structure within the discourse culture. This formal arrangement or structures in abstract writing is realized in the form of rhetorical moves. One of the most common methods to investigate rhetorical moves is known as Move Structure Analysis that is first introduced by Swales. Swales (1981) developed the theory of genre analysis using rhetorical moves to describe the structures of research articles. Samraj (2009) stated that moves and steps are seen as functional components and that in a genre they are optional or obligatory. Moves appear separately or combine to different degrees in the boundaries of one sentence and produce an embedded movement. Tanko (2017) stated that when the boundaries of two or more moves that occur in each sentence align with syntactic unit boundaries, partial embedding occurs. Moves can have various elements that recognize the move in any combination. Pho (2008) also expressed that each move has its own open purpose, which, when combined with other moves, contributes to the overall informative reason for the text. Certain sorts of moves appear more frequently in a genre than the others and are categorized as conventional, whilst others that do not present as frequently are categorized as optional.

Based on the Move Structure Analysis method, abstracts should contain five moves (Swales and Feak, 2004). Those moves are Move 1 which purpose is to tell the reader what they need to know about the topic, what the background of the research article writing is, and why the topic of the research is important; Move 2 which purpose is to tell what the study is about and what the purpose of the composing of the research article is; Move

3 tells about how the research is done, what methods are used in the research, who the subjects of the analysis are, and how the data are collected; Move 4 intended to know what discovered in the study; and the last one, Move 5 aimed to explain what the findings mean, its conclusion and any recommendation for future studies. Similar to Swales, Hyland's (2000) theory discusses Introduction, Purpose, Method, Product, and Conclusion (I-P-M-Pr-C) in composing an abstract.

Because much research was interested in abstract, move analysis studies on research articles were crucial, in line with the rising amount of academic literature. According to the statement, scholars produced abstract writing studies based on diverse studies and perspectives. There is various research that focused on the comparison of studies from different cultures (Donesch-ježo., 2016; Povolna, R., 2016; Maher, F., 2017; Zhao, J., & Wu, T., 2013), different disciplines (Samraj, B., 2005; Behnam & Golpour, 2014; Bhatti et al., 2019; Afshar et al., 2018; Elhambakhsh et al., 2018), different languages used (Zhao, J., & Wu, T. 2013; Behnam & Golpour, 2014; Pasavoravate, 2011; Hirano, 2009), and works from different authors (Suryani & Rismiyanti, 2019; Ren & Lin, 2011). Meanwhile, some other study focused on the compassion of abstract within the same particular disciplines such as in the Linguistics (Suntara, W., & Usaha, S., 2013; Pho, P. D., 2016), Engineering field (Maswana et al., 2015), Accounting (Amnuai, 2019), Nanoscience and Nanotechnology (Hwang, C., Shu, J., Nguyen, T. H., & Su, T. J., 2017) and Literature (Tankó, 2017). According to the relevant research, comparative studies are seeing a considerable increase in abstract studies (Kaya & Yaiz, 2020). It is important to conduct comparative research in order to uncover various rules and practices across genres in future studies.

Despite the fact that the topic of hard scientific abstract has been addressed in earlier study, the rhetorical studies of hard science in research article abstracts are still under-studied. Hwang et al. (2017) stated that in general, the number of research articles on genre analysis of abstracts of science and technology research articles is still small in comparison with those in social sciences research articles. Hardjanto (2017) also stated that the number of research regarding this disciplines is relatively low. Thus this study seeks to find in its research article abstracts and linguistic aspects, which realized rhetoric moves of Indonesian scholars who focus on hard science. The data were taken from Indonesian authors who attended a workshop on October 8 & 9 2020 for the first round and October 28 & 29 2020 for the second round. The workshop itself was held by the researcher and team to discuss ways of writing abstracts that are acceptable and suitable to standards for international publishing.

This study is conducted to answer the questions: (1) What are the rhetorical moves of abstracts written by the hard science scholars?, and; (2) What are the linguistic features realized to support the rhetorical moves of abstracts written by the hard science scholar?

This research aims to examine the rhetorical moves of UPI's hard science scholars in constructing their abstracts. The objectives of this study are: 1) to investigate the rhetorical patterns used by hard science scholars' research article abstracts; 2) to get to know about how well is the scholars' understanding about abstract; and 3) to examine how significant the improvement in the first draft and final revised abstracts before and after coaching clinic workshop regarding abstract.

With respect to the previous studies, Hyland's (2000) theory was used for this research analysis. The findings of this study are expected to be able to explain more deeply about abstract writing by academics from hard science field and

how well their understanding towards abstract writing is.

Method

Research Design

This study employed a descriptive comparative qualitative approach. A qualitative method is a study approach that is founded on the idea that the case being examined is representative of cases of a certain type, and therefore a single example can provide insight into the events and situations that are frequent in a group form where its case has been selected (Kumar, 2014). The researcher also used group interviews to find out information for participant data. Therefore, this descriptive comparative qualitative method with group interview is considered suitable because the purpose of this study is to explore and compare empirical facts about the realization of the abstract rhetorical motion of research articles among academics in the hard science field.

In fact, genre-approach step analysis was used in this research to analyze data (Hyland, 2000). The explanation is that move analysis will discover the similarities and differences in rhetorical moves seen in the abstracts of hard sciences published by scholars in the study paper. In some previous research, this methodology analysis was also used within the previous research, for example Darabad (2016), Hwang et al. (2017), and Suherdi et al. (2020). Besides that, Hyland's theory allows the researcher to record genre development, move analysis, and linguistic features applied in the abstracts.

Data Sources

30 abstracts written by fifteen scholars who joined the Coaching Clinic Workshop were used as data for this study. Fifteen of them were the first drafts which were collected before the workshop and the remaining fifteen 15 were the revised version abstracts which were collected after workshop. The collected journals are written by scholars from some faculties

which are 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 more or less about 5800 words.

Data Collection

The data collection process began with the collection of abstracts from UPI academicians using Google Form. Then request permission to use them as a research data for the purpose of completing this research. The researcher also conducted an interview to seek how well the participants’ understanding about abstract. After all the papers have been downloaded and the interview been saved, they have been placed in a folder to simplify the analysis process. Last but not least, the researchers extracted the title

page along with the abstracts from the full text article and saved it as Word files.

Data Analysis

Because of the Covid-19 pandemic situation, a number of discussions were held online. These series of discussions are intended to make researchers who also conduct research about abstract comprehend the schedule and the material to be analyzed better. To evaluate the schedule for the review process, the first discussion session was carried out. The second discussion session was held to synchronize the perception of all researchers about the principle and the concept of move analysis from the theory of Hyland’s (2000) which is discussing about Introduction, Purpose, Method, Product, and Conclusion (I-P-M-Pr-C) as the main analysis model.

Table 1. Hyland’s (2000) 5 moves and its steps’ Framework for Rhetorical Analysis of Research Article’s Abstract.

<p>Move 1 Introduction: Step 1 Arguing for topic significance Step 2 Making topic generalization Step 3 Defining the key term(s) Step 4 Identifying gap</p>
<p>Move 2 Purpose</p>
<p>Move 3 Methodology: Step 1 Describing participants/data sources Step 2 Describing instrument(s) Step 3 Describing procedure and context</p>
<p>Move 4 Findings</p>
<p>Move 5 Conclusion Step 1 Deducing conclusion Step 2 Evaluating the significance of the research Step 3 Stating limitation Step 4 Presenting recommendation or implication</p>

In order to get them more used to the Hyland's study style, three student researchers as the research assistants were selected and given an assignment to review one abstract research article each. In order to verify the outcomes of the preliminary analysis, the third discussion session was carried out. Some feedback was specifically provided to the work of the student researchers. For the analysis part, there are six steps that were done by the researchers. First, the researchers separately analyzed the thirty chosen abstracts. The sentences in the abstracts became the units of analysis. Second, each abstract was first broken down into sentences, which were moved to a table, to simplify the analysis process. Third, the top-down analysis stage was completed by labeling any sentences with a relevant move. Then the fourth step of the analysis is steps were broken down into the appropriate moves, depending on the Hylands' analysis model. The fifth step which is bottom-up reviewing stage was completed once by highlighting the linguistic features of the moves, including verb used, verb tense, and voice of phrase. Last but not least, to ensure its credibility, the experts reviewed the study's results.

In digging out information about the workshop participants, the researcher first asked some questions. Those questions are about the participants' experience in receiving the material from the Coaching Clinic workshop. The questions that the researchers asked were: (1) Were the material delivered in the workshop clear enough for the participants?; (2) In composing abstracts, do the participants usually write in Indonesian and then translate it to English or do they write in English immediately?; (3) Do the participants know that abstracts have structure? Do they know it before workshop or after workshop?; (4) What parts of their abstracts that they revised or edited after receiving the workshop material?; (5) Why did they revise it like that?, and; (6) What are the markers of move 1 to move 5? Were the structures of moves and steps complete?

The answers of the interview were recorded and transcribed to Word File and then translated to English. Those interview questions were asked to some participants for sample of the analysis.

Results and discussion

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. It also shows the patterns of moves that are mostly used in the abstracts; development of genre and move structure, as well as the linguistics featured which realized in the abstracts.

The Five Moves Model Structures

Move 1 - Introduction

This move occurred 80% in the hard science field abstracts before the intervention and improves for 7% in the after the intervention ones. This move is considered as conventional 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. All steps seem to be appeared in those abstracts.

The technology that develops impacts education and causes changes in learning styles. E-learning is one of the technology used and innovations in the learning process. Universities provide e-learning applications, but not many lecturers utilized the facility. The learning combined between conventional learning and e-learning can be used as an alternative to achieve the demands of the regulation of the Ministry of Research, Technology and Higher Education of Indonesia No. 44 of 2015. (RA22, Step 2, step 3, step 1, and step 4 consecutively)

One of the competencies demanded in the 21st century is mathematical competence, which is characterized by the ability to

understand concepts, problem-solving abilities, critical thinking skills, creative thinking skills, and communication skills. (RA30, step 1)

that the step 3, which is defining key terms is the least step used in move 1. Different from it, in this research article, the least step used is step 4 which is identifying gap.

The previous research that was composed by Kurniawan et al. (2019) stated

Table 2. Hard Science Move's Saliency

HARD SCIENCE					
Move	Before	After	Step	Before	After
1	80%	87%	1	60%	40%
			2	66%	73%
			3	20%	47%
			4	20%	40%
2	86%	87%	n/a		
3	100%	100%	1	80%	80%
			2	86%	87%
			3	80%	87%
4	93%	93%	n/a		
5	73%	87%	1	53%	53%
			2	13%	27%
			3	0%	13%
			4	46%	20%

Move 2 - Purpose

This move occurred for 86 and 87% in the hard field abstracts. This move is considered as the conventional move. This step serves to indicate and outline the purpose of the article. It is the second-fewest step used by hard science field abstract writers.

This study aims to empower 21st century skills through project learning on waste processing carried out in schools (RA20, Move 2)

This research aims to investigate the achievement of Sustainable Development Goals (SDG's) and student's response towards the implementation of producing samolo juice. (RA23, Move 2)

Move 2 is no further analyzed because move 2 does not have any step. Different from Ramadhini et al. (2021) and Kurniawan et al.'s (2019), move 2 for this research is not considered obligatory but a conventional one.

Move 3 - Methodology

This move occurred in all the hard science field abstracts data collected. The saliency of this move is 100% which makes this move considered as the obligatory move. The aim of this move is to advise designs, processes, assumptions, approaches and data. The authors provided data from the participants or collection methods, instruments, as well as the procedure and context, in this step. The dominant steps used within this move are step 2 both right before and after the intervention.

To measure the basic science process skills of the students used an instrument which consists of 12 questions in the form of essay and to measure the learning outcomes used test consists of 30 questions in the form of multiple choice with 5 option. (RA3, step 3, step 2, step 1, step 3 consecutively.)

Subjects of research trials consist of 35 students of class X MLA 1 SMAN 2 Padang. The instruments of data collection are questionnaire of validity and practice test. Data were analyzed using descriptive statistics. (RA 9, step 1, step3, and step 2 consecutively).

These results are similar to findings by Pho (2008) that nearly all the abstracts analysed featured the move. Again, this move is a must in every abstract study move and if this step is missed it is very hard to understand the research (Pho, 2008). Maher's (2017) findings also have Move 3 as an obligatory move because it occurs for 100%. Similar to those previous researches, the writer found that move 3 is occurred for 100% which makes the move 3 as the obligatory move.

Move 4 – Findings

This move's salience occurred for 93% in the hard science field abstracts. From the data collected, it seems like there is no improvement in move 4's salience. Both before and after intervention, the salience occurs for ninety-three percent. This calculation makes this move considered as an conventional move. This move is aimed at providing the principal conclusions and claims.

Overall, the results showed that the PBL model's application had a high effect on students' critical thinking skills. Besides, the effect size of applying the PBL model on students' critical thinking skills did not differ based on differences in class, year of study, and sample size. However, there were significant differences in effect sizes between study groups based on treatment duration. Thus, PBL will achieve a higher level of effectiveness, taking into account the treatment duration.(RA29, Move 4).

Results showed that mathematical problem-solving situations gave significantly small negative effect in decreasing students' joyful emotion. Moreover, it also gave significantly small positive effect in increasing students' depressed emotion.(RA10, Move 4)

Different from the previous research by Ren (2011), that compares rhetorical moves of abstracts in published research articles and master's foreign-language theses, move 4 is not an obligatory move that occurs for 100%, yet a conventional move.

Move 5 – Conclusion

This move occurrence is the highest in term of improvement. In the before intervention abstract draft, it occurs for only 73% while in the after intervention, it occurs for 87% within this hard science field abstracts. This move is considered as conventional move. The purpose of this move is to state conclusions of the analyzed data, draw inferences, descriptions, implementations and wider implications. The authors concluded, assessed the importance of analysis, specified constraints and submitted their suggestion or implications. The dominant step used in this move is step 1 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.

Conclusion: The findings suggest that several reasons in lack of condom use among MSM. The findings are valuable to inform interventions needed to increase condom use among MSM. Nurses needs to provide information on condom use to minimise HIV transmission. (RA17, step 1, step 2, and step 4 consecutively)

This study suggests that families are expected to participate in health education about how to care for children with thalassemia. (RA16, step 4)

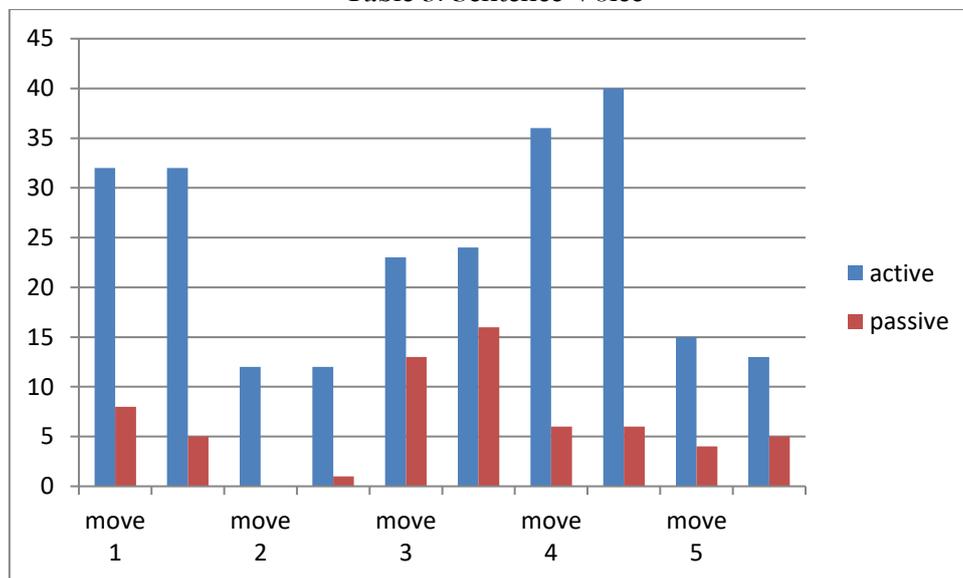
In the previous research by Ren (2019), the occurrence of move 5 is 80%, which move is considered as the conventional move. Similar to the previous research, this research article also has move 5 as a conventional move.

Linguistics Realizations of The Moves

This sub-section is address to answer the second research question

concerning some linguistic features such as tense, sentence voice, and verb tense to realize the rhetorical move.

Table 3. Sentence Voice



The results demonstrated that the voice the writers choose to use in the abstracts is present. Some writers are more comfortable with active voice reflecting moves and steps. Some data show that hard science scholars expresses their ideas comfortably in their research article writing by using active voice, especially in move 1, move 3 and move 4. The developing abstract in term of linguistic realization, namely voice of sentence is not that significant. The changes in the voice of sentence are only a slight.

The data below will give examples to both active voice and passive voice:

Examples of active voice:

*“This research **aims** to determine the effect of applying the hybrid learning model on student learning outcomes in thermochemistry in the Basic Chemistry subject of the 2018/2019 academic year.”(RA22)*

*“The sample retrieval technique employed **was** the Convenience sample which resulted on 250 respondents.”(RA21)*

“The 2013 curriculum requires students to develop high-level thinking skills.” (RA24)

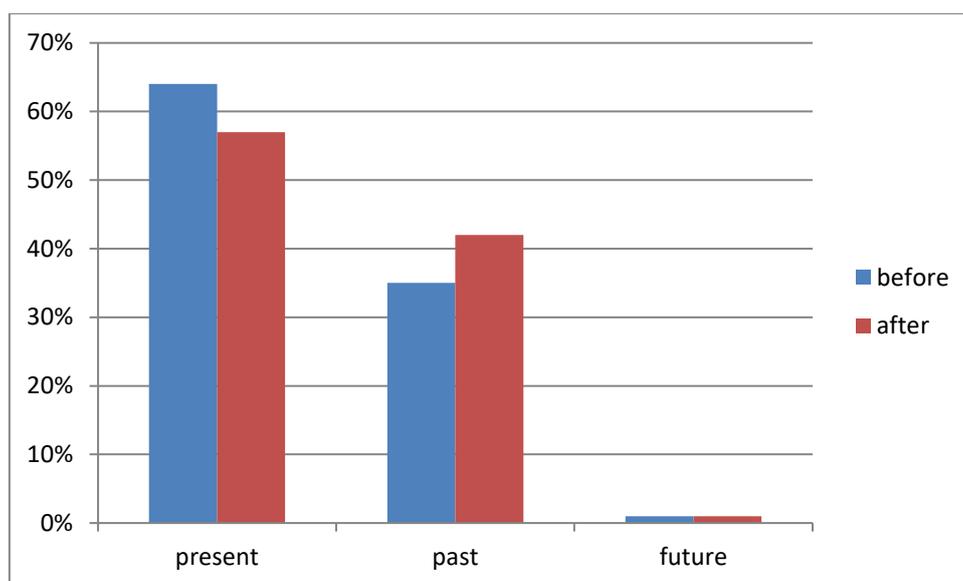
Examples of passive voice:

*“To prove whether the PjBL model is also effectively used in mathematics learning in order to improve mathematical competence, a **study was conducted**, more precisely a study using the literature study method.”(RA30)*

*“Data **were analyzed** using descriptive statistics.” (RA9)*

“Meanwhile purposive and snowball sampling were chosen as sampling techniques.” (RA23)

Table 4. Tense



In the abstract data obtained both before after the intervention, there were three tenses used by the participants of this abstract coaching clinic. The three tenses are present tense, past tense, and future tense. From total 4 types of present tense, only 3 were used by the participants, namely simple, progressive, and perfect. In the abstract before the intervention, the result showed that in terms of tense usage, the most used tense by the authors was the present tense. The present tense used by the workshop participants occurred around 64% on the abstract draft before the intervention and decreased from 7% to 57% on the intervention abstract. Similar to the present tense, tense types used for past tense were simple, progressive, and perfect. For the using of the past tense itself, in the abstract draft before the intervention, past tense is used by 35% and an increase in the abstract after the intervention of 7% as well to 42% in abstracts intervention. For the future tense usage, this future only appeared once either in the draft abstract before the intervention or after the intervention and revision.

The data below will give examples to present tense, past tense, and future tense used in the abstracts:

Examples of the using of present tense:

*“The 21st century **is** a century full of challenges with the need to master various competencies.”(RA15)*

*“This research data analysis technique **uses** descriptive analysis, independent t-testing, and single-track ANOVA analysis.”(RA6)*

*“Age, education, employment status and number of children **are** factors that influence individual coping strategies.”(RA1)*

Examples of the using of past tense:

*“The research method used **was** explanatory survey with an online questionnaire to collect data.” (RA21)*

*“Data **were analyzed** using descriptive statistics.” (RA9)*

*“The results of this research **revealed** that there was an impact of the problem based learning model to basic science process skills and learning outcomes of learners on the concept of food digestion system and there **was** a relationship between basic science process skills and learning outcomes.” (RA18)*

Development of Genre and Move Structure

Coaching Clinic Analysis of Abstract Writing were used as the sample of analysis.

In the explanation of this sub chapter, data of some participants of
a. Move 1

Move 1	
Before	After
The 21 st century is a century full of challenges with the need to master various competencies. One of the competencies demanded in the 21 st century is mathematical competence, which is characterized by the ability to understand concepts, problem-solving abilities, critical thinking skills, creative thinking skills, and communication skills. To master these various abilities, of course, is not easy. Realizing this requires hard and smart efforts, one of which is through education. Among the hard and smart efforts in the field of education is the use of the Project Based-Learning (PjBL) model for mathematical abilities. In other fields of study, for example, science, the PjBL model has proven to be effective in developing students' abilities.	The 21 st century is a century full of challenges with the need to master various competencies. One of the competencies demanded in the 21 st century is mathematical competence, which is characterized by the ability to understand concepts, problem-solving abilities, critical thinking skills, creative thinking skills, and communication skills. To master these various abilities, of course, is not easy, so realizing this requires hard and smart efforts, one of which is through education. Among the hard and smart efforts in the field of education is the use of the Project Based-Learning (PjBL) model for mathematical abilities. In other fields of study, for example, science, the PjBL model has proven to be effective in developing students' abilities.

For this move, RA15 and RA30 Move 1 were used as the sample of the analysis. In this RA, there is a slight change of abstract after the intervention. The author wrote move 1 into six sentences in the abstract before the intervention, while in the abstract after the intervention the author affiliated the once the forth sentence into the third sentence by using coordinating conjunction. It can be seen from the use of comma and the conjunction "so". The
b. Move 2

change of number sentence then makes a change in number of moves and steps used as well. In the abstract before the intervention, the combination of steps used is 2-1-2-4-3-1, while in the abstract after the intervention, the combination of steps used is 2-1-2-3-1. Both in the first draft abstract and the revised one, the author started the abstracts using step 2 which is the topic generalization and ends the move 1 with the used of step 1 which is topic significance.

Move 2	
Before	After
The purposes of this research were to investigate the effect of problem based learning models on basic science process skills and student learning outcomes on the concept of a food digestive system.	The purpose of this research was to see the effect of problem based learning models on basic science process skills and student learning outcomes on the concept of a food digestive system.

For this move, RA3 and RA18 Move 2 were used as the sample of the analysis. In this

RA, there is a slight change of abstract after the intervention. The author used verb

“were to investigate” in the abstract before the intervention, and he changed the verb into “was to see” in the abstract after intervention. From this data, it can be seen

c. Move 3

that the author is aware of the singular and plural matters and adjust right words to be put in the abstract he composed.

Move 3	
Before	After
This research data analysis technique uses descriptive analysis, independent t-testing, and single-track ANOVA analysis.	The research method used was explanatory survey with an online questionnaire to collect data. The population in this study was Indonesian college students. The sample retrieval technique employed was the convenience sample which resulted on 250 respondents. This research data analysis technique used descriptive analysis, independent t-testing, and single-track ANOVA analysis.

For this move, RA6 and RA21 Move 3 were used. Significant change occurred in move 3 where there is an additional move. In the first abstract before receiving the intervention, the author only included one step of move 3 which is step 2, the instruments used for process the data. After the intervention, the writer added the sentence "The research method used was explanatory survey with an online

d. Move 4

questionnaire to collect data. The population in this study was Indonesian college students. The sample retrieval technique employed was the convenience sample which resulted on 250 respondents." to the abstract which categorized as step 3 and 1, describing procedure and context and the participants and data sources that she used.

Move 4	
Before	After
Age, education, employment status and number of children are factors that influence individual coping strategies	The results shows that 62,2% had a positive coping strategies and 37.8% had a negative coping mechanism. The interview results show that there were three themes namely the process of grieving, fear of stigma and an increase in spiritual activity. Age, education, employment status and number of children were found to be the factors that influenced individuals on coping mechanism.

For this move, RA1 and RA16 Move 4 were used. There are a lot of change occurred in move 4 In the first abstract before receiving the intervention, the author only composed the findings of the research in one sentence. But after the intervention, the author seems to be more aware about

the importance of the detail in findings of the research article. The author added two sentences which are “The results shows that 62,2% had a positive coping strategies and 37.8% had a negative coping mechanism. The interview results show that there were three themes namely the process of grieving,

fear of stigma and an increase in spiritual activity.”

e. Move 5

Move 5	
Before	After
-	Therefore, it is suggested for further research can offer various alternative methods of blended learning and assessment integrated with technology that is easily accessible and cheap.

For this move, RA4 dan RA19, Move 5 were used. Stagnant situation also occurred in move 5: conclusion. It seems that move 5 gets the least amount of attention from the author since in the before intervention abstract draft, the author did not include move 5 in his abstract. There's an improvement in the abstract after intervention. It can be seen from the way the author added a sentence to the revised version. The author add a sentence which is move 5, step 4, that is stating recommendation or implication.

In analyzing the interview data according to genre development and move structure, the researcher first asked some questions. Those questions are about the participants' experience in receiving the material from the Coaching Clinic workshop. Here are the questions that the researcher asked and the answers to the questions.

Question one:

“Apakah materi yang disampaikan dalam workshop sudah cukup jelas bagi peserta?”

Partisipan 1 : “Ya, para pembicara di abstract coaching clinic workshop menjelaskan tentang abstrak dengan sangat baik.”

Partisipan 2 : “Ya, materinya jelas. Sekarang saya mengerti bahwa abstrak juga memiliki struktur yang harus diikuti agar artikel penelitian yang kami lakukan dapat dipublikasikan.”

Partisipan 3 : “Materinya jelas dan pembicara menjelaskannya dengan baik. Sekarang saya bingung jika saya telah menulis abstrak saya (abstrak sebelum intervensi) sesuai dengan struktur yang benar.”

Translated transcript:

“Were the material delivered in the workshop clear enough for the participants?”

Participant 1: “Yes, the speakers in the abstract coaching clinic workshop explained about abstract really well.”

Participant 2: “Yes, the material is clear. Now I understand that abstract also has structure to be followed just so the research article that we conducted can be published.”

Participant 3: “The material is clear and the speakers explain it well. Now I got confused if I have written my abstract (abstract before intervention) in accordance to the right structure.”

Question two:

“Dalam mengarang abstrak, apakah peserta biasanya menulis dalam bahasa Indonesia kemudian menerjemahkannya ke dalam bahasa Inggris atau langsung menulis dalam bahasa Inggris?”

Translated transcript:

“In composing abstracts, do the participants usually write in Indonesian and then translate it to English or do they write in English immediately?”

For this question, the sample of the analysis answered the same that they had to write their abstracts in Indonesian first then

translate it in English. They usually use Google translate, translator's service, or even ask for their friends who are able to speak English fluently to answer translate their abstract from Indonesian to English.

Question three:

"Apakah peserta tahu bahwa abstrak memiliki struktur? Apakah mereka mengetahuinya sebelum atau sesudah pelaksanaan workshop?"

Partisipan 1 : "Saya sudah pernah menyusun skripsi dan tahu sedikit tentang struktur abstrak."

Partisipan 2: "Saya tidak tahu bahwa abstrak memiliki struktur, saya biasanya menulis abstrak dengan mengikuti struktur abstrak yang saya temukan pada penelitian sebelumnya."

Partisipan 3: "Saya tahu tentang struktur abstrak sebelumnya tetapi tidak tentang gerakan dan langkah yang dimiliki struktur abstrak."

"Do the participants know that abstracts have structure? Do they know it before workshop or after workshop?"

Participant 1: "I have composed thesis before and know a little bit about abstract structure."

Participant 2: "I have no idea that abstract has structure, I usually write abstract by following the structure of abstract that I found on the previous researches."

Participant 3: "I know about abstract structure before but not about moves and steps that abstract structure has."

Question four:

"Bagian mana dari abstrak mereka yang direvisi atau diedit setelah menerima materi workshop?"

Partisipan 1: "Saya mengedit penggunaan verb seperti perubahan kalimat suara dari aktif menjadi pasif, dan tense dari past ke present, dan seterusnya."

Partisipan 2 : "Saya menambahkan atau menghapus kalimat agar minimal 150 kata dan tidak lebih dari 250 kata."

Partisipan 3: "Saya menambahkan beberapa kalimat yang sesuai dengan struktur gerakan."

Translated transcript:

"What parts of their abstracts that they revised or edited after receiving the workshop material?"

Participant 1: "I edited the verb use like the changing of voice sentence from active to passive, and tense from past to present, and all the way around."

Participant 2: "I added or removed the sentences just so it can be at least 150 words and no more than 250 words."

Participant 3: "I added some sentences that fit to the move structures."

Question five:

"Mengapa mereka merevisinya seperti itu?"

Translated transcript:

"Why did they revise it like that?"

For this question, the sample of the analysis answered the same that they did the revision because they wanted to follow the structure of abstract based on the move structure. They want their research article to be accepted by the publisher as well.

Question six:

"Apa penanda dari move ! sampai dengan move 5? Apakah struktur move dan sturkturnya lengkap?"

Translated transcript:

"What are the markers of move 1 to move 5? Were the structures of moves and steps complete?"

The participants were kind of confused when they were asked this question. So they only answered about the moves and steps part. Some of them completed the moves and steps and some only added some moves and steps that they think is important.

This study aims to uncover small number of abstracts in terms of genre development, moves, steps, and linguistics research. The findings of this study revealed the dominant and least used rhetorical moves of hard science scholars and linguistic characteristics that are realized to

support the rhetorical moves. For the development genre, the researcher gave an abstract coaching clinic to participants which abstracts are used and then found out the difference in the original abstract and the revised version after the coaching session.

The findings demonstrate that in the hard field science abstracts of Indonesian University of Education scholars, there are two types of moves occurrence, namely obligatory and conventional. There are no moves that concluded as an optional move since all of the moves occur for more than 66%. The least move used found in this research is Move 5 which is intended to state conclusions of the analyzed data, draw inferences, descriptions, implementations and wider implications. The obligatory moves regarding the salience are Move 3. Move 3 is intended to provide information for designs, procedures, assumptions, approaches and data; and to state the main findings and arguments. The most frequent step in move 3 is step two which is describing instruments that are used by the scholars to collect their data analysis. It is dominant both in the before intervention abstract's draft and also in the after intervention one. Move 1, move 2, move 4, and move 5 are considered as the conventional move. For move 5, it is considered as the least used move. This move is intended to state conclusions of the analyzed data, draw inferences, descriptions, implementations and wider implications. The authors concluded, assessed the importance of analysis, specified constraints and submitted their suggestion or implications. Even though this move is the least used move, it rises the highest in term of development. It rises for 14% from 73% to 87%. In the step level, the step that has the highest rise is step 2 from Move 5 which rises for about 14%, and the drastically decreased is step 1 from move 1 which decreases for about 20%.

Regarding the linguistic realizations which support the rhetorical moves, such as active voice, passive voice, present tense, past tense, and future tense, 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 a few times from the total of thirty abstracts. It makes the bar chart comparing the active and passive voice look unbalanced. The authors of those abstracts comfortably express their abstract writing by using active voice. In terms of the using of tense in the abstracts collected, the dominant tense used by the authors is the present tense.

Conclusion

This research helps to expand relevant literature for publishing in the field of scientific journals. The grouping of moves and steps in this paper can be taken as a reference for writers to appropriately compose their abstract. By studying the features of rhetorical moves, the writers potentially will provide a higher abstract standard that is coherent with the norms and regulations of their disciplines. Future researchers may explore the disciplinary scope of the abstracts for a greater corpus of future study. This small number of corpus may be diverged in discussing this study.

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