

STUDENTS' KNOWLEDGE OF THE RHETORICAL STRUCTURE OF RESEARCH ARTICLES PUBLISHED IN REPUTABLE JOURNALS

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Abstract

Good and appropriate teaching materials not only have a significant effect on improving the ability of students to write scientific articles but also can increase their knowledge and understanding of scientific articles required by reputable journals. The purpose of this study was to analyze the level of students' knowledge about writing research articles based on reputable journal criteria. The research design used was survey. The data were collected using a questionnaire about students' knowledge of research article writing that was distributed to 120 students of English Education Study Programs who had studied Article Writing course. The analysis shows the level of students' knowledge about abstract writing is the Mid category (M), the introduction section of the article is in the Low category (L), the methodology section is in the Mid (M) category, result and discussion section is in the Low (L) category, and the conclusion of the article is in the Mid (M) category. From these findings, it can be concluded that students need very adequate knowledge in writing research articles based on criteria of reputable journals.

Keywords: Research Articles, Reputable Journals, Knowledge

Introduction

In the last two decades, the presentation of scientific findings in English is one of the most important aspects for students, lecturers, and scientists because even in non-English speaking countries, multilingual researchers have been gradually moving towards publishing their research findings in English. As has been widely mentioned in the literature, these researchers have to cope with new developments and must master English writing skills if they want to be successful in the discourse community through publishing their research works.

Research articles (RA) is one of the genres in academic writing; it is regarded as a medium to exchange and communicate new knowledge to the academic community members (Flowerdew, 2005; Kanoksilapatham, 2009). It involves the presentation of the research findings, and knowledge sharing among the academic community (Jusoff, Abdullah, & Samah, 2009). However, writing a presentable RA for publication requires not only the awareness of the language use, but also the rhetorical organisation and features of the texts (Amnuai & Wannaruk, 2013). These skills are referred as the discourse competency. Thus, it has been proposed that writers who wish to share their research findings with the academic community successfully should acquire the discourse competency (Bruce, 2009). They also need to be aware of differences in text structures to get their papers to be published in the international journals, and acquire international recognition (Zand-Vakili & Kashani, 2012).

Research article (RA) as an example of academic genres can be identified by its communicative purpose and by the characteristic features that make it different from other academic genres. It is important to emphasize that a research article should report on research findings that are not only sound (valid) and previously unpublished (original), but also add some new understanding, observation, proofs, i.e. potentially important information (Hengl and Gould, 2002). A RA has a required structure and style, which is by international consensus known as "Introduction Methods Results and Discussion" or IMRaD (Swales, 1990; 2004). However, a RA is not only a technically rigid document, but also a subjective intellectual product that reflects personal opinions and beliefs (Hengl and Gould, 2002), so that it requires good skills in both structuring and phrasing the discoveries and thoughts.

There have been numerous studies on the structure of RAs after Swales' (1990) introduction of the genre analysis of a text (Fazilatfar & Naseri, 2014). Some of these studies focused on a certain section of the Ras

(Alhuqbani, 2013; Peacock, 2011; Swales & Najjar, 1987), and some on the whole structure of the RAs (Amnuai & Wannaruk, 2013; Kanoksilapatham, 2005; Nwogu, 1997; Posteguillo, 1999).

Since research has become the main indicator for assessing performance among academics, researchers in universities are encouraged to conduct studies to develop new knowledge and innovation and exchange the findings among professional communities (Supatranont, 2012). Despite this fact, it is found that low English proficiency among NNES (Non-Native English Speakers) is one of the obstacles for the writers to publish their studies internationally (Supatranont, 2012). To counter this issue, a proper guidelines in writing the sections of the RAs in English should be developed to assist the writers in producing an impactful RA.

Many studies have been done on the rhetorical structure of research article, especially introductions. In her their study, Ahamad and Yusof (2012) employed Swales (1990) CARS model to analyze the Islamic academic research article introductions. The finding reveals that the move-structure of Islamic RA introductions does not closely resemble the move structure proposed by the CARS model. Chahal (2014) studied RA introductions in cultural studies and found that while the examined RAIs can be considered to generally conform to the CARS model, they display noteworthy variation in relation to the obligatory status of moves. Doro (2013) conducted a study on the rhetoric structure of RA abstracts in English Studies Journals. The finding shows that only a few of the abstract follow the full suggested structure.

Many Authors have discussed guidelines and rules to help both students and scientists write RAs. Kats (2006) discussed the strategies to change research report to become a manuscript. Olson (2014), Lichtfouse (2013), and Silva (2015) wrote the strategies for writing RA to be published in journals. Some writers write quite detailed strategies to help researchers with English as a foreign/second language, such as books written by Yang (1995), Englander (2014), and Wallwork (2016). However, writing a RA is still a most difficult task for students of non-native English speakers. What is the most effective model of learning for these students is a very crucial question to answer?

Though researchers set out to investigate the rhetorical organization of RA in different academic fields and different languages and writers publish books for writing research articles, to the best of my knowledge, no study has been done with regard to students' knowledge of the rehetorical structure of research article written in English. The present study, therefore, investigates students' problems in writing parts of introduction section of research article in English by using CARS model developed by Swales.

Method

The design used in this study was survey. The data were collected using a questionnaire distributed to 120 students of English Education Study Program of State University of Padang who had finished taking Article Writing course. The questionnaire distributed was a closed questionnaire consisting of 5 components, namely abstract, introduction, methodology, result and discussion, and conclusion.

Respondents were asked to choose one of the four answer options available, namely inadequate (IA), less adequate (LA), Adequate (A), and Very Adequate (VA). Each choice was weighted. Inadeqaute gets 1, less edequate gets 2, adequate gets 3, and very adequate gets 4. The data were analyzed by looking for the average score for each item statement and grouping it into five categories, namely Very Low (VL), Low (L), Mid (M), High (H), and Very High (VH).

Result and Discussion

The level of students knowledge of the rhetorical structure and the linguistic features of research articles was identified by using 5 common components of research article, namely abstract, introduction, method, result and discussion, and conclusion.

Abstract Section

Students' knowledge of the rhetorical structure and linguistic features of the 'abstract' of a research article was identified by using 6 statements followed by 4 alternative choices, namely Inadequate (IA), Less Adequate (LA), Adequate (A), and Very Adequate (VA). The following table illustrates the results of analyzing the level of student knowledge regarding the abstract of a research article.

Table 1: The level of students' knowledge regarding the abstract of research articles

No	Statement	Options				T	A	C
		IA	LA	A	VA			
1	Providing the background or the centrality of the research	63	70	45	28	206	1,72	L
2	Explaining the purpose(s) and the procedure of the research	12	64	195	44	315	2,63	M

Table 1. Cont

3	Presenting the main results/findings of the research	45	76	96	20	237	1,98	L
4	Suggesting the significance/importance of findings beyond the research, considering the contributions to theory, research and practice	49	62	72	64	247	2,06	L
5	Using tenses appropriately	20	30	210	60	320	2,67	M
6	Using technical terms and other words or phrases appropriately	32	66	150	20	268	2,23	M
	Total	221	368	768	236	1593	2,21	M

Table 1 above shows that the level of students' knowledge regarding the abstract of the research article is in the Mid category (M), with an average score of 2.21. Of the 6 statements, 3 statements are in the Mid (M) category and 3 statements are in the Low (L) category. The statement that gets the Low category (L) is 'providing the background or the centrality of the research', with an average score of 1.72, "presenting the main results/findings of the research' (average score of 1.98), and "suggesting the significance/importance of findings beyond the research, considering the contributions to theory, research and practice" (average score of 2.06). The statement with the highest score in this abstract sub-component is 'using tenses in English appropriately', with an average score of 2.67. Based on the results of this analysis, we can conclude that the level of students' knowledge is not sufficient (M) in writing abstracts of research articles. Thus, they need teaching materials that can improve their knowledge in writing good abstracts. The six points of the above statement need to be prioritized in developing teaching materials for writing articles in English.

Introduction Section

The level of students' knowledge of the introduction section of research articles was revealed by using 14 statements followed by 4 alternative choices, namely Inadequate (IA), Less Adequate (LA), Adequate (A), and Very Adequate (VA). The fourteen items were grouped into four aspects, namely establish a research territory, establish a niche, occupy the niche, and the key linguistic features. The following table illustrates the results of the analysis of the level of students' knowledge regarding the introduction section of a research article.

Table 2: The level of students' knowledge of introduction section of research articles

No	Statement	Choices				T	A	C
		IA	LA	A	VA			
	Establish a research territory							
1	Claiming centrality	41	104	63	24	232	1,93	L
2	Making generalization	49	62	72	64	247	2,06	L
3	Reviewing aspects of previous studies in the area	24	94	123	32	273	2,28	M
4	Defining key terms and constructs	23	76	117	80	296	2,47	M
	Establish a niche							
5	Counter claiming of other research	47	102	48	24	221	1,84	L
6	Indicating a gap in previous research	49	62	72	64	247	2,06	L
7	Raising a question	41	104	63	24	232	1,93	L
8	Extending previous knowledge	49	62	72	64	247	2,06	L
	occupy the niche							
9	Outlining purpose, aim, and objectives	24	76	144	40	284	2,37	M
10	Announcing present research	49	62	72	64	247	2,06	L
11	Announcing principal findings	41	104	63	24	232	1,93	L
12	Indicating research article structure	49	62	72	64	247	2,06	L
	Key linguistic features							
13	Using tenses	24	116	96	24	260	2,17	L
14	Using technical terms or specific words and phrases	49	62	72	64	247	2,06	L
	Total	559	1148	1149	656	3512	2,09	L

The results of the analysis in Table 2 above show that the level of students' knowledge regarding the introduction section of research articles is in the Low (L) category, with an average score of 2.09. Of the 14 statement items, 3 statements are in the Mid (M) category and 11 statement statements are in the Low (L) category. Statements in the Mid (M) category are 'reviewing the results of previous studies' (average score of 2.28), 'defining terms' (average score of 2.47), and 'mentioning outlines of objectives' (mean score 2.37). Whereas the statement with the lowest score on this introductory sub-component is 'making a refutation of other research claims' with a mean score of 1.84. Based on the results of this analysis, we can conclude that the level of students' knowledge is not sufficient or low (L) in writing the introduction section of research article. All the items in the statement above need to get a balanced proportion in the writing of teaching materials, according to the scores available. As such, Studenys need teaching materials that can increase their knowledge in writing introduction section that can be accepted in reputable journals.

Method Section

The level of students' knowledge of the method section of research article 'was revealed by using 13 items followed by followed by 4 alternative choices, namely Inadequate (IA), Less Adequate (LA), Adequate (A), and Very Adequate (VA). The items in this method component were grouped into four aspects, namely presenting procedures for measuring research variables, describing data collection procedures, describing data analysis procedures, and key linguistic features. The following table illustrates the results of the analysis of the level of students' knowledge regarding the method section of a research article

Table 3: The level of students' knowledge regarding the method section of research articles

No	Items	Choices				T	A	C
		IA	LA	A	VA			
Present the Procedures for Measuring Variables								
1	Overviewing the methodological approach	16	58	210	20	304	2,53	M
2	Explaining methods of measuring variables	18	50	183	64	315	2,63	M
3	Justifying approach and methods	29	76	135	32	272	2,27	M
Describe the data collection procedures								
4	Describing the population and sample	12	34	240	44	330	2,75	M
5	Describing th instrument	18	38	216	44	316	2,63	M
6	Describing steps in data collection process	24	52	171	52	299	2,49	M
7	Justifying data collection procedures	14	44	219	44	321	2,68	M
Describe the Data Analysis Procedures								
8	Outlining data analysis procedures	22	52	180	48	302	2,52	M
9	Justifying data analysis procedures	24	58	162	52	296	2,47	M
10	Previewing results	14	44	219	44	321	2,68	M
Key Lingusitic Features								
11	Using tenses appropriately	22	52	180	48	302	2,52	M
12	Using active and passive voices	22	62	156	60	300	2,50	M
13	Using technical terms adn specific words or phrases	41	66	114	32	253	2,11	L
	Total	276	686	2385	584	3931	2,52	M

Table 3 above shows that the level of student knowledge regarding the method section of the research article is in the Mid (M) category, with an average score of 2.52. Of the 13 statements, 12 statements are in the Mid (M) category and 1 statement is in the Low (L) category. This shows that students' retention regarding the method of writing part of the research methodology in scientific articles is better than the knowledge of students regarding writing the introduction section.

However, the total average indicates that students' knowledge is still included in the category that needs to be improved, especially in items with scores below 2.60. Statements that score below 2.60 are 'reviewing the research-based methodology' with a mean score of 2.53, 'making an outline of data analysis procedures', with a mean score of 2.52, 'using tense the right ', with a mean score of 2.54, 'using active and passive sentences', with a mean score of 2.50, 'describing data collection steps' with a score of 2.49, 'justifying data

analysis procedures', with a mean score 2.47, 'justify approach and methodology by explaining acceptability and citing previous research' with a mean score of 2.27, and 'using the right expression to explain the methodology part', with a mean score of 2.11. Thus, students need teaching materials that can improve their knowledge in writing accepted methodological sections in reputable journals.

Result and Discussion Section

The level of students' knowledge with regard to result and discussion section of research articles was revealed by using 13 items of statements followed by followed by 4 alternative choices, namely Inadequate (IA), Less Adequate (LA), Adequate (A), and Very Adequate (VA). The statement items in this result of discussion section are grouped into 3 aspects, namely providing background information, presenting statement of results, and commenting on results and findings. The following table illustrates the results of the analysis of the level of student knowledge regarding the result and discussion section of research articles

Table 4: The level of students' knowledge regarding result and discussion section

No	Items	Choices				T	A	C
		IA	LA	A	VA			
Provide Background Information								
1	Restating aims, research questions or hypothesis	23	78	135	52	288	2,40	M
2	Restating key published research	48	64	96	32	240	2,00	L
3	Restating key methodological approach	24	94	108	52	278	2,32	M
Present a Statement of Result								
4	Explaining results	22	94	117	48	281	2,34	M
5	Expnading statements about key results	46	64	96	40	246	2,05	L
Evaluate/Comment on Results or Findings								
6	Suggest reasons for results	23	78	135	52	288	2,40	M
7	Commenting the expected or unexpected results	48	64	96	32	240	2,00	L
8	Referencing to and comparing results with previous studies	24	94	108	52	278	2,32	M
9	Providng examples of results	29	96	78	68	271	2,26	M
10	Making more general claims	22	94	117	48	281	2,34	M
11	Quoting previous research to support the claims	46	64	96	40	246	2,05	L
12	Making suggestionn or recommendation for future research	49	94	54	24	221	1,84	L
13	Justifying the importance of further research	49	96	36	44	225	1,88	L
	Total	453	1074	1272	584	3383	2,17	L

The data in Table 6 above shows that the level of student knowledge regarding the result and discussion section of the research article is in the Low category (L), with an average score of 2.17. Of the 13 statements, 7 items are in the Mid (M) category and 6 statements are in the Low (L) category. There are no statements in the category of High (H) and Very High (VH). This shows that students' knowledge regarding how to write the discussion of research results in scientific articles is slightly higher than their knowledge of introduction section but lower than their knowledge of method section. The mean of total score shows that student knowledge falls into the very category that needs to be improved, especially in items whose score is below 2.20. Statements that score below 2.20 are:

- Reiterate key research*
- Expand statements about key results*
- Comment on unexpected results*
- Cite previous research to support claims*
- Make recommendations / suggestions for further research*
- Justify the importance of further research*

Thus, they need teaching materials that can improve their knowledge in writing part of the results discussion that is acceptable in reputable journals.

Conclusion Section

There are 9 items of statements to reveal the 'Conclusions' section followed by followed by 4 alternative choices, namely Inadequate (IA), Less Adequate (LA), Adequate (A), and Very Adequate (VA). The items in this conclusion component are grouped into 4 aspects, namely restating the objectives and approach of the research, summarizing the findings, evaluating the contribution of the research, and recommendations for further research. The following table illustrates the results of the analysis of the level of student knowledge regarding the conclusion section a research article

Table 5: The level of students' knowledge regarding the conclusion section

No	Items	Choices				T	A	C
		IA	LA	A	VA			
Restatement of Aims and Methodological Approach								
1	Restating aims of study	12	62	210	28	312	2,60	M
2	Restating key features of research approach and methods	17	58	204	24	303	2,53	M
Summary of Findings								
3	Summarising key findings	12	76	153	76	317	2,64	M
Evaluation of research contribution								
4	Stating the importance of findings for theory and research development	24	90	117	48	279	2,33	M
5	Stating the importance findings for practical application	43	70	96	40	249	2,08	L
6	Justifying the importance of findings	18	94	147	24	283	2,36	M
7	Identifying any limitations	12	96	147	44	299	2,49	M
Recommendation for frther research								
8	Making recommendation for further research	18	94	147	24	283	2,36	M
9	Justifying the recommendations	12	96	147	44	299	2,49	M
		168	736	1368	352	2624	2,43	M

The data in Table 5 above shows that the level of students' knowledge regarding the conclusion section of the research article is in the Mid (M) category, with an average score of 2.43. From 9 statements, 8 items are in the Mid (M) category and 1 statement is in the Low (L) category. There are no statements that are in the High (H) category and Very High (VH) category. This shows that students' knowledge regarding how to write a conclusion in scientific articles is higher than their knowledge of the discussion of results. The Average of total score shows that student knowledge falls into the category that needs to be improved, especially in items whose score is below 2.45. Thus, they need teaching materials that can increase their knowledge in writing acceptable conclusions in reputable journals.

Conclusion

This survey study aims to describe students' knowledge about writing research articles based on criteria of reputable journals. The research findings show that student knowledge about research article writing is still low. Thus they need teaching material that contains very adequate knowledge and information about the procedures for writing research articles based on criteria of reputable journals. They need not only knowledge about what will be written, but also about how to write it in English.

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