CHAPTER III
RESEARCH METHOD

This chapter unpacks the methods and techniques used in the present study. It covers: research design; research settings; data collecting techniques; research instruments; research procedure; data analysis techniques; expected results; and timeline of the research.

3.1 Research Design

This study is designed as content analysis by using descriptive qualitative approach. It is to obtain adequate information regarding to what extent the manifestation of move-step patterns occurs in research articles written by Indonesian undergraduate English education students (Creswell, 2012; Fraenkel, Wallen, & Hyun, 2012). Although percentages representing the frequency of occurrences of each feature and the excerpts from the corpus will be displayed simultaneously, the latter will be the major presentation considering the nature of discourse analysis.

3.2 The Corpus

The target subject of the present study was a corpus of 113 undergraduate students' research articles, which was named as "Indonesian Undergraduate Research Articles' Findings and Discussion Section (IURAFS)" from one state university in the area of West Java Province in the field of English education. The rationale is that the demand of international publication leads to the encouragement of English education students to become the role models for other non-English majors in realizing the 'eligible' rhetorical moves. Particularly, findings and discussion section involves the authors' proficiency in applying proper rhetorical moves to provide a more coherent flow of ideas presentation. Purposive selection technique by looking at the types of F&D section was done. Thus, at first, the total number of RAs obtained from the department was 138 RAs. After employing the technique, 113 RAs were selected. The corpus covers five years of graduation range from 2013-2017.

As the software needs training data to ease the process of labelling the sentences, a small corpus of 16 RAs were purposively selected and inputted into the program as the database. They are taken from four reputated journals each of which represents certain criteria, namely: (1) TEFLIN Journal (national-accredited), (2) Indonesian Journal of Applied Linguistics (Indonesia-based scopus-indexed), and (3) Oxford ELT Journal (UK-based scopus-indexed). The rationale of choosing those journals is that they represent a variety of topics and research methods in the field of English language teaching and learning including text-based analysis for ELT and affiliations. In addition, they apply a double-blind review until present. The selected RAs are those published in the respective journal between 2014-2017 to obtain similar reliable variety of rhetorical moves to the main corpus. Considering the move analysis that was conducted by using AntMover 1.10, all RAs were converted into .txt files as the only eligible format.

3.3. Data Collection Techniques

Textual approach of corpus-based discourse analysis (Hyland, 2009) becomes the primary technique to conduct the investigation on the manifestation of move-step patterns in the students' RAs' findings and discussion section. It conforms to the objective of this study aiming to seek the transparencies of the patterns manifested in the RAs that will be associated with logical coherence. Thus, critical and contextual approaches will not be combined. To realize the conductance of textual approach, content analysis (Fraenkel, Wallen & Hyun, 2012, p. 478) by using AntMover 1.10 was done to obtain adequate information in addressing the research questions. The transparency of each instrument is as follows.

3.3.1 Research Instruments

The first instrument used in this study is AntMover 1.10 to address the two research questions: (1) *What moves and their constituent steps are manifested in the Indonesian undergraduate students' research articles?* and (2) *What configurations of the move-step patterns are manifested in the Indonesian undergraduate students' research articles?* The rationale is that the software particularly functions as the platform for analyzing corpus-based move-step patterns. The 'Add to training' tool provides accessibility for the analyst to

capture new move-step patterns realized in a text, which are not included or explicitly and linguistically similar in the built-in module from the software. Particularly, 'Move', 'Outline', and 'Add to training' tools were used.

Table 3. 1.
Synthesized Model of Move Analysis in F&D Section

Move 1	Providing background information
Step 1 (Class 1)	Stating the context (background theory and/or research aims)
Step 2 (Class 2)	Preparing the sequence of the presentation
Step 3 (Class 3)	Restating data collection and analysis procedure
Move 2	Reporting results
Step 1 (Class 4)	Statement of result (either numerical value or reference to a graph or table)
Step 2 (Class 5)	Finding (without a reference to a graph or table)
Move 3 (Class 6)	Summarizing results
Move 4	Commenting on results
Step 1 (Class 7)	Interpreting results
Step 2 (Class 8)	Comparing results with literature
Step 3 (Class 9)	Accounting for results
Step 4 (Class 10)*	Evaluating results (significance, limitation, implication, and/or recommendation for future work)

*Should not necessarily include the four derivatives because 'limitation' and 'recommendation for future work' parts become obligatory in IMRAD version only

The second instrument is a synthesized version of move-analysis model. The source of move-analysis models used to formulate the synthesized one are: (1) Dudley-Evans' (1994) model; (2) Pho's (2008) model; and (3) Ruiying and Allison's (2003) model for the findings/results and discussion section (see Chapter Two). In its process, the researcher firstly selected the Ruiying and Allison's model because it has been internationally used among international scholars. Then, the formulation of the constituent steps for each move was done by translating the coverage of each move in the model into steps. The three models were matched to the revised model to get the commonalities and differences. At last, three steps were added: Step 1 of Move 1 (i.e. stating the context), Step 1 of Move 2 (i.e. statement of result), and Step 2 of Move 2 (finding).

Thus, the other sections will not be analyzed because the practice of combining research findings/results with discussion determines the readers' capability in understanding the whole structure of the article. In addition, the manifestation of move-step patterns within the section depends much on the authors' repertiore in writing a research-based article. Table 3.1 illustrates the synthesized model.

3.3.2 Research Procedure

This study comprises several steps in collecting the data, as follows.

1. Asked for ethical permission to each department of the university to collect the target research articles.
2. Employed purposive selection technique to determine the RAs for the students' corpus and the training data corpus.
3. Prepared both corpora to be inputted into the software.
4. Analyzed both corpora sequentially (training data corpus followed by students' corpus) by conducting content analysis through textual approach. It was done by employing the general procedure of corpus-based move analysis mentioned in Chapter two, point 2.5.2.
5. Re-checked the analysis results to obtain any inaccurate labelling.
6. Determined the representative RAs by employing random sampling for inter- and intra- rater reliability.
7. Handed in the RAs to the expert for the rating process, while simultaneously did the intra-rater reliability.

3.4 Data Analysis Techniques

3.4.1 Corpus-Based Analysis Process

The unit of analysis is sentence. All research articles in both corpora were converted into .txt format because the software can only read Notepad-version document. In addition, since four sections have their own move-analysis model, each text was segmented into four separate .txt documents to ease the analysis process. First, after finishing the training data, the researcher inserted the IURAFS corpus into AntMover 1.10 in which it automatically processed and provided the transparencies of step or class for each sentence from the text which had been segmented by the software as well. Second, the existing steps or class were

classified into some moves based on the synthesized model. Third, the frequency of each move and its constituent steps were counted based on the occurrences displayed in the 'Outline' tool. Fourth, each original text, which is in .docx format, was given 'underline' highlight from the results of each move and its constituent steps. Then, the obtained results from the respective article were translated into a table representing the manifestation of move-step patterns in the discourse. The following tables represents some examples of data analysis results.

Table 3. 2.
Sample Tabulation of the Manifestation of Moves and Steps in the IURAFS Corpus

Research article	Move 1			Move 2		Move 3
	Step 1	Step 2	Step 3	Step 1	Step 2	N/A
1	✓	-	✓	✓	✓	-
2	-	✓	✓	-	✓	✓
3	✓	-	✓	✓	✓	-
4	-	✓	✓	-	✓	✓

Table 3. 3.
Sample Frequency of Move-step Occurrences

Move	*f*	Step	*f*	RAs featuring a move (*f*)	RAs featuring a step (*f*)
1	15	1	12	20	18
		2	15	19	24
2	17	1	23	17	17
3	24	1	22	22	22

Table 3. 4.
Sample Frequency of Move Patterns

Observed pattern	Examples	Frequency *f*
Single move	1	2
Two-move configuration (1 – 2)n	1-2-1-2	8
Three-move configuration (1 – 2)n – 3	1-2-1-2-3	15
Total		25

Table 3. 5.
Sample Excerpt of the Move-Step Manifestation

Research article	Move	Step	Research method	Example

1	1	2	Qualitative	This sub-section presents the findings from observation notes.
2	2	1	Quantitative	About 90% of the respondents responded positively.

The frequency of each move and step by counting the number of research articles featuring each move and step was recorded to verify the status. According to Rasmeenin (2006) and Nodoushan and Khakbaz (2011), the moves are classified as obligatory (if they were manifested in 100% of the corpus), conventional (if manifested in 66% to 99% of the corpus), or optional (if in less than 66% of the corpus).

3.4.2 Data Credibility and Data Confidence

To obtain good data credibility and data confidence, coder triangulation method was done by conducting inter- and intra-coder reliability. By statistics, Cohen's kappa (k) result of agreement became the benchmark. The rationale of using Cohen Kappa instead of the percentage agreement is that the former is considered more useful by previous experts because it represents the chance-corrected agreement as well in the realm of move analysis (Orwin, 1994; Kanoksilapatham, 2005; Biber et al., 2007; Moreno & Swales, 2018). The move-step patterns of some research articles were cross-checked by one lecturer (Crookes, 1986) in the expertise of discourse analysis. This study also did data triangulation method by elaborating statistical results and excerpts from the corpus to address the two research questions. The following steps illustrate the procedure of conducting inter- and intra-coder reliability.

1. One month after the first and second analysis, the researcher selected 25% of the whole corpus (Crookes, 1986; Kanoksilapatham, 2005) by using random number table (The Rand Corporation, 1955) for inter-coder reliability.
2. The researcher prepared the Word documents of the selected RAs in the form of table, so that the coder can just put the number on the column beside the sentence column.
3. The researcher conducted one-session discussion with the coder to become acquainted with the use of the coding system

(Kanoksilapatham, 2005) by giving the printed detailed description of the synthesized model and some examples from the training data.

4. The coder independently coded the F&D section of the 28 research articles from the main corpus.
5. Simultaneously, the researcher conducted intra-coder reliability to ensure the consistency of the codes.
6. The researcher selected another 25% of the whole corpus randomly.
7. During both processes, the researcher discussed some identified disagreements three times.
8. After both processes were finished, the researcher calculated the Cohen Kappa's (k) value manually by using Excel.
9. After obtaining the final results, the researcher discussed some identified disagreements again with the coder.

For presenting the Kappa value for both reliability coding results, the researcher adopted Moreno's and Swales' table. McHugh (2012, p. 279) classified the value into six (6) levels of agreement. Orwin (1994) in Kanoksilapatham (2005) also summarized similar rules for the interpretation to McHugh's version. Considering the nature of this study, the latter version was selected as the reference of interpretation. Table 3.6 depicts both interpretation systems.

Table 3. 6.
Interpretation of Cohen's Kappa

McHugh's (2012) version			Orwin's (1994) version	
Value of Kappa	Level of Agreement	% of Data that are Reliable	Value of Kappa	Level of Agreement
0-.20	None	0-4%	<.40	Poor
.21-.39	Minimal	4-15%	.40-.59	Fair
.40-.59	Weak	15-35%	.60-.74	Good
.60-.79	Moderate	35-63%	>.75	Excellent
.80-.90	Strong	64-81%		
Above .90	Almost Perfect	82-100%		

To acknowledge, the average Kappa value for the inter- and intra-coder reliability was excellent, i.e. 0.92 and 0.98 respectively. Tables 3.7 and 3.8 depict the results of inter- and intra-code reliability respectively.

Table 3. 7.
Inter-Coder Reliability Results

Comm. function	Average Kappa	Agreement (%)	A and B (%)	Not A and not B (%)	Disagreement (%)	A and not B (%)	B and not A (%)
PBI (M1)	**0.94**	98.56%	12.01%	86.55%	1.44%	0.19%	1.25%
STC (S1)	0.96	99.81%	2.69%	97.12%	0.19%	0.19%	0.00%
PSP (S2)	0.69	98.75%	1.44%	97.31%	1.25%	0.00%	1.25%
RDCAP (S3)	0.97	99.62%	6.44%	93.18%	0.38%	0.19%	0.19%
RR (M2)	**0.93**	96.54%	51.20%	45.34%	3.46%	0.77%	2.69%
SS (S1)	0.92	97.79%	15.08%	82.71%	2.21%	2.02%	0.19%
FD (S2)	0.91	95.68%	34.29%	61.38%	4.32%	0.00%	4.32%
SR (M3)	**0.89**	97.98%	9.61%	88.38%	2.02%	2.02%	0.00%
CR (M4)	**0.93**	97.41%	21.81%	75.60%	2.59%	2.02%	0.58%
IR (S1)	0.90	98.27%	9.03%	89.24%	1.73%	1.54%	0.19%
CRL (S2)	0.96	99.14%	10.76%	88.38%	0.86%	0.10%	0.77%
AR (S3)	0.77	99.33%	1.15%	98.17%	0.67%	0.67%	0.00%
ER (S4)	0.80	99.81%	0.38%	99.42%	0.19%	0.19%	0.00%
Average*	**0.92**	98%	24%	74%	2%	1%	1%

*The average value of the four moves

Table 3. 8.
Intra-Coder Reliability Results

Comm. function	Average Kappa	Agreement (%)	A and B (%)	Not A and not B (%)	Disagreement (%)	A and not B (%)	B and not A (%)
PBI (M1)	**0.99**	99.70%	12.32%	87.39%	0.30%	0.00%	0.30%
STC (S1)	0.99	99.90%	4.93%	94.98%	0.10%	0.00%	0.10%
PSP (S2)	1.00	100.00%	1.38%	98.62%	0.00%	0.00%	0.00%
RDCAP (S3)	1.00	100.00%	5.52%	94.48%	0.00%	0.00%	0.00%
RR (M2)	**0.98**	98.82%	41.18%	57.64%	1.18%	0.49%	0.69%
SS (S1)	0.99	99.80%	11.13%	88.67%	0.20%	0.00%	0.20%
FD (S2)	0.99	99.41%	28.87%	70.54%	0.59%	0.39%	0.20%
SR (M3)	**0.96**	99.11%	13.10%	86.01%	0.89%	0.69%	0.20%
CR (M4)	**0.99**	99.51%	31.82%	67.68%	0.49%	0.20%	0.30%
IR (S1)	0.98	99.61%	11.13%	88.47%	0.39%	0.20%	0.20%
CRL (S2)	0.99	99.90%	9.46%	90.44%	0.10%	0.00%	0.10%
AR (S3)	0.96	99.31%	8.08%	90.44%	0.10%	0.00%	0.10%
ER (S4)	1.00	100.00%	1.28%	98.72%	0.00%	0.00%	0,00%
Average*	**0.98**	99.29%	24.61%	74.68%	0.71%	0.34%	0.37%

*The average value of the four moves

3.5 Timeline of the Research

This study is planned to be accomplished for about four months within which several activities were done. Table 3.9 exposes the detail information about the planned activities.

Table 3. 9.
Timeline of the Research Completion

No	**Activity**	**Month**			
		February	March	April	May
1.	Validated the research				

	instruments.	
2.	Asked for ethical permission to each department.	
3.	Collected the research articles.	
4.	Handed in the consent form to the department.	
5.	Prepared and analyzed the research articles through CBDA.	
6.	Conducted inter-coder reliability	
7.	Conducted intra-coder reliability	
8.	Re-checked the final results	
9.	Prepared data display, then reported the findings.	
10.	Did supervision with the supervisor(s) about the results	