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by Imroatus Solikhah

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Improving Argumentative Writing through IMRAD to Indonesian EFL Learners

Imroatus Solikhah¹, Bulent Tarman² & Teguh Budiharso³

^{1,3}UIN Raden Mas Said Surakarta, Indonesia

²Turan University, Almaty, Kazakhstan

Corresponding email: btarman@gmail.com;

iimqueenoslo@gmail.com; teguhprof@gmail.com

Abstract

This study's goal is to find differences in mastery of writing journal articles between thematic and conventional learning models, as well as between thematic and conventional learning methods in the classroom with textbooks. This study used a 2x2 factorial design as a quasi-experiment and assigned 160 students as a sample and used four treatments. Data were analyzed using a two-way ANOVA $p=0.05$. Results show (1) students who are taught using thematic versus conventional learning have significantly different mastery of writing journal articles than students who are taught using textbooks; (2) students who are taught using thematic versus conventional learning have significantly different strength of writing journal articles. This study elaborates how IMRAD (Introduction, Methods, Results and Discussion) model for article writing has been performed by the students. Students who received thematic writing and textbook achieved 70.1% and students who received thematic writing without textbook gained 66.8%. Respectively, overall the achievement of students who received treatments in thematic writing and textbook are the Introduction and review of theories sections (83.3%), Methods and Results section (77.8%), Discussion section (77.2%), the Conclusion section (77.8%) and References section (83.3%).

Keywords: journal article, thematic, IMRAD, workbook, argumentative writing

1. Introduction

Students in Indonesia continue to struggle with their abilities to create journal articles that are considered substandard. Writing techniques and writing features have been highlighted as causes of poor writing quality. Writing practices include a lack of learning literacy skills (Verappan et al., 2011), poor guidance (Sakir, 2020), not optimal rhetorical of journal writing (Nuckles et al., 2020), a low level of student creativity (Haerazi et al., 2020), weak writing strategies (Shegay et al., 2020), and rhetorical context to produce a significant difference in journal writing, according to research (Aljumah, 2020). Furthermore, writing aspects are associated with students' poor writing performance (Ramos, et al., 2019), low interest in writing due to lack of motivation, lecturer factors, environment, publishing (Rofiqo, et al., 2018), reasoning process and ideas are not well developed (Sardila, et al., 2016), lack of reading

activity and students' low ability to write journals (Widodo, et al., 2020), recovery models whose formulations are adapted (Susanti, 2016).

In particular, given the current pandemic, it is critical to address the issue of student mastery in journal article writing through training, learning methods, and lecture models (Darmuki et al., 2021; Tarman, 2020), especially because the learning process is becoming increasingly limited and lecturers' delivery of material is becoming less exploratory (Bhakar & Singh, 2014). Increased effectiveness of textbooks regarded capable of growing students' abilities in academic writing, particularly articles for journal publication (Hidayati, et al., 2020)

This new multiliteracy era sees a shift from printed pages to multiple online formats, including online reading, navigation and online research. E-books, or e-books, can be used in education to help students adapt to this new literacy since they are more accessible, portable, and environmentally friendly than traditional books (Tétreault, et. al., 2021).. Text that can be read on a printer. However, students also reported issues with eye fatigue and dealing with lengthy texts when reading e-books, yet this still helped students enhance their abilities to write journal articles (Chou-Huang, 2012). The existence of thematic textbooks is considered helpful to writing progress. Thematic writing is potential to improve academic achievement in writing, so that more practices in writing are required (Lane, 2013; Meiszner 2011).

In each case, the claim is made that theme learning concepts have the potential to equip writing practices in higher education institutions. However, limited experimentally based research on the effect of thematic learning and regular textbook needs attention. Aside from that, the epidemic era, which is limiting the learning process in increasingly limited ways, necessitates lecturers becoming more innovative in their delivery of learning materials, one of which is thematic-based learning. When it comes to teaching and learning, theme-based learning is a technique that incorporates numerous lessons inside a single theme in order to present students with more in-depth and relevant experiences and knowledge (Evans-Amalu & Claravall, 2021).

Significant experience occurs when students gain an understanding of a subject that has been studied through hands-on experience while making connections to other concepts that have been learned. Due to the fact that thematic-based learning is considered to be one of the most effective learning approaches for increasing students' knowledge, attitudes, and skills throughout the learning process. Problem Based Learning (PBL) learning is one of the thematic learning styles that may be applied to various situations. This technique will arrange students into small groups who will work together to solve a problem while also listening to the lecturer's presentation of the content. Additionally, this approach encourages students to be more active in their reading and in obtaining knowledge from outside sources in order to find answers to problems and to think more creatively more self-sufficient (Lovisia, 2018).

Many studies have proven that smart learning environments can help students learn in a way that is in line with the 4.0 revolution in education, thanks to advances

in technology, pedagogy, and innovative tactics (Kalimullina et al., 2021; Shatunova et al., 2021). As a result, by utilizing cutting-edge learning models and creating new technologies, learning techniques with intelligent surroundings can deliver the learning ecosystem of the future. Intelligent learning environments are those that use individualized, context-aware, personalized, and intelligent technologies to motivate, engage, and deliver intelligent feedback to students for a better learning experience (Agbo, et al., 2019; Hwang, 2014; Olawale et al., 2021; Omodan & Diko, 2021). Recent developments in the field of intelligent learning environments have piqued the interest of college students (Adebola, 2021; Dhlamini & Molaodi, 2021; Hoe et al., 2021; Wolhuter & Jacobs, 2021). Opportunities to study trends in smart learning approaches in the literature and student debates have arisen because of the increasing growth of the area.

It is very important to do a thorough review of the literature on intelligent learning approaches. One of the first concerns is to give a general overview of how far the experts have come and what they're working on now. Second, it will give researchers important information that can help them decide where to do future research and where to publish their findings. This is called "field hotspots" and "publishing venues." provide a summary of what the experts have done and where they are now (Ming, 2006). Second, it provides researchers important information to decide where to do future research and where to publish their findings. When researchers look at the data, they will be able to figure out what kind of research they should do in the future and where they should put their findings in the world (Tabari & Wang, 2022).

Wang, et al. (2020) looked at China's research and development in the field of intelligent learning in 2012-2019. Wang et al., (2020) wanted to determine when Chinese researchers began researching intelligent learning, what the current trend was, and what contributions there had been to scholarly publications. This transition is even more relevant today because of unforeseen circumstances that create an emergency in the world of education, for example, where formal learning is not possible due to school closures as experienced in the. For this reason and others, a shift away from traditional classrooms to those equipped with cutting-edge technology is beneficial to students' educational experiences. Learning environments that are both adaptive and personalized are essential in this case.

In this study, we looked at how argumentation textbooks based on thematic learning can help students improve their abilities and skills when they write journal articles using IMRAD a basic model of research article writing that stands for Introduction, Methods, Results, and Discussion. Most of the main text follows the IMRAD system, which is how to write a scientific paper. What it does is figure out different questions that people ask. It starts with "Why did you start your study?" and goes on to answer and explain "What did you do?" and "What did you find?" Then it moves on to "What does it mean?"

1.1. Research Questions

The present study sought an answer to four research questions of teaching of thematic writing and thematic textbook increases students performance in journal article writing.

- 1) Is thematic-based learning method better for improving students' ability in writing journal articles than conventional learning methods?
- 2) Is the application of thematic-based learning methods able to improve students' mastery in writing journal articles better than conventional groups of students who use textbooks?
- 3) How do students perform IMRAD in the journal article?

1.2. Research Hypothesis

- H₁: Thematic-based learning methods are better at improving students' ability to write journal articles than conventional learning methods
- H₂: The application of thematic-based learning methods can improve students' mastery in writing journal articles better than conventional groups of students who use textbooks
- H₃: The application of thematic-based learning methods can improve student mastery in writing journal articles better than conventional in the group of students who do not use textbooks
- H₄. There is an interaction effect between the use of learning models and the use of textbooks on the ability to write scientific journal articles.

2. Theoretical Review

2.1. Thematic Learning

The delivery of competencies that are focused on a single theme is referred to as thematic-based learning. To do this, it is necessary to integrate various components of the curriculum. Because it eliminates fragmentation from the entire teaching and learning process, thematic instruction is a powerful instrument for implementing the curriculum in the classroom. Pedagogy themes helps students enhance their cognitive capacities, such as their ability to think creatively and critically. Montebon & Orleans (2019) argue in a similar spirit that thematic instruction increases meaningful learning among students since the activities that are delivered have a purpose. Meanwhile, Dilek (2007) advocates for thematic teaching for meaningful learning because of its effectiveness in helping students to think in a cross-disciplinary manner, according to the author.

Thematic education is a method for bringing together several academic disciplines. Thematic learning promotes student activity in the following areas: physical, psychological, intellectual, and emotional. In the context of the Fourth Industrial Revolution, active learning between books and IT-based media is required. The media is based on the premise that classroom instruction is not only about transforming knowledge, but also stimulate the active participation of students and the development of their learning skills. For the purpose of learning, it brings together

teaching resources or publications that are capable of completely describing the content (Mustikasari, et al., 2020).

The most effective technique to contextualize learning methods is through thematic-based learning strategies. In addition, theme-based instruction aids students in better understanding their specific learning styles and provides cooperative and interactive learning opportunities for both students and teachers (Min, 2012). Thematic learning is a teaching strategy that incorporates a variety of subjects into a single unit. Material development is focused on themes, which are the primary focus of learning and a tool for understanding the content of several integrated sessions in the classroom. Encourage the use of thematic learning in the classroom or on campus. Through the use of a theme, students can investigate a variety of phenomena that occur in everyday life. Nature gives knowledge on numerous fields as a whole, rather than as individual specialties. Students' learning will be more thorough and relevant if a theme is developed from natural and social occurrences that they are familiar with (Donohue, 2020; MacQuarrie, et al., 2015).

Thematic instruction entails making the theme the focus of students' learning. This method engages students in an entertaining way while connecting abstract ideas and understanding. The teacher should know the content well and know what ideas to convey and how to teach them. It's important for teachers to understand how kids learn what they already know.

Topics, themes, chapters, and learning design components are often presented to students one-on-one by the teacher in traditional learning techniques. There are several advantages and benefits of using thematic-based learning approaches rather than separate learning, such as: The benefits include: One of the most intriguing topics I've ever come upon. This will encourage students to be more eager and intriguing during the learning process. One of the most effective ways to arouse attention and drive more conversation and problem solution is to use a captivating theme. Making student connections deeper; Learning is a continuous process in which the brain seeks to link new experiences. Incorporating a theme into a lesson plan helps to reinforce and reflect the way people naturally learn.

Overarching themes help students identify and develop connections between other students and the environments surrounding them, leading to more creative and innovative by building bridges between topics, subjects, and abilities (Gazioğlu & Güner, 2021; Keefer & Haj-Broussard, 2020). Themes can be drawn from anything that is relevant to the kids, such as their favorite books, their surroundings, or the events in their lives. Exploring this topic with students might help them get a better grasp of the world around them. One of the key goals of employing themes in the classroom is to create an environment where students can perceive the meaningful uses of academic material and skills. When students can apply what they've learned in the classroom to real-world problems, they retain more of what they've learned. Harvard psychologist Howard Gardner asserted in his book *Frames of Mind: The Theory of Multiple Intelligences* that people have a wide range of abilities and capabilities. As Howard argues, there are eight sorts of intelligence: verbal and

written intelligence, logical-mathematical intelligence, visual-spatial intelligence, kinesthetic-physical Intelligence and musical Intelligence (Kadarwati, et al., 2017).

The following are some of the benefits of theme learning: The following benefits are realized: (1) Student learning activities and experiences are always appropriate to the degree of knowledge development; (2) the selected learning can be tailored to the interests of the participants; and (3) all learning activities are more memorable. (4) Integrated learning encourages and develops students' social thinking skills in a way that is relevant and meaningful so that the knowledge learned is reasonably long lasting. (5) Integrated learning presents activities that are pragmatic in character, dealing with real-world situations that students may encounter in their daily lives. (6) Thematic learning can improve cooperation between students and teachers, making the learning process more enjoyable (Kadarwati, et al., 2017).

Thematic learning, on the other hand, has downsides. Thematic learning has several flaws that need to be addressed: In order for teachers to be effective, they must possess a wide range of knowledge, abilities, and ethics. a high level of trust in the ability to package and develop teaching materials; (2) thematic learning necessitates students to think independently, both academically and creatively; (3) thematic learning facilities and reading sources must be more numerous and varied, and supported by internet facilities; (4) implementing a flexible curriculum and origami.

All disciplines must be taught using a scientific approach, as outlined in the 2013 Curriculum. This technique should consist of the following steps: introducing the subject matter; processing it; observing it; attempting it; asking it; making it; and drawing conclusions. The scientific component includes the following elements: (1) presenting learning that can increase student curiosity (foster a sense of wonder), (2) increasing students' skills in observing (encourage observation), (3) possessing analytical skills (push of analysis), and (4) communicating findings to others (require communication). Another requirement for using the thematic learning methods is to follow a scientific process. This process includes making observations, formulating hypotheses, devising experiments to test the theories, conducting experiments to confirm or refute the theories, and finally, accepting or rejecting the theories.

2.2. Instructional Media

When media is incorporated in the learning activities, students are able to process visual and aural information. Organization in working memory and subsequent storage in long-term memory is required for this. As a result of this, one should be able to form a more complete understanding of the subject matter. An effective delivery of visual media enables students to reason and draw conclusions by visualizing how certain processes take place; auditory media such as music are designed to promote student engagement through formats such as illustrations, pictures, graphics, maps, animations, videos, and slides (Mayer, 2014).

Effective auditory delivery, according to Costley & colleagues (2014), gives verbal information that the learner can digest efficiently, emphasizes the information,

and captures the learner's attention using nonverbal cues such as music and background noise. While using visual and audio media in video lectures has many benefits, online lecturers must be aware of the drawbacks of inefficient media transmission. It has been shown that problems with information transmission can occur when the media is given in a way that reduces the audience's concentration, attention, interest, and engagement (Curry et al., 2013) and places a stress on working memory (Cierniak et al., 2014).

Aside from the media already mentioned, textbooks are a common tool in the educational process. Educators and lecturers alike rely on textbooks as a source of information and theory for their classes, whether they are in elementary school or a four-year university. Students might learn a lot about the subject matter they are studying by consulting textbooks (Tyson, 2021). When a textbook is assembled and produced by professionals in their field, it is considered to be an official textbook which is then made available for students to use. Textbooks are texts used to teach specific subjects. Textbooks are standard volumes written by professionals in their disciplines with educational purposes in mind. In it, there are teaching facilities and a collection of instructional learning materials, both written and unwritten, that contain knowledge, skills, and attitudes that need to be learnt, and these resources are organized in a systematic manner.

Teachers frequently resort to textbooks to increase engagement with the overall learning objective (Barker et al., 2016), and they can be extremely effective resources in any classroom. "Textbooks provide educators with a variety of "pedagogical tools and materials for class discussion and action, and textbooks serve as the foundation for learning," according to Barker. Due to the wide range of professional requirements that future students may face, it may be difficult to develop a general textbook.

2.3. Journal Writing

Having students who are proficient in journal writing as a condition for producing journal articles is critical. In academic writing, readers focus on the paper's first line: abstract. This last line indicates the scope and significance of the paper's remaining material and research. In a few words, abstracts summarize the paper's essential points in a clear and concise manner. They help the reader to assess an article, dissertation, or thesis as a whole in terms of validity, relevance, and correctness.

All scholarly works are summarized in an abstract (Bachir, 2018; Wallwork, 2011). Research articles are the primary focus of this organization. When it comes to actually reading a document, the abstract, according to Hyland (2009), can make or break the experience. To put it another way, the abstract "provides a decision point for the reader to assess whether or not the full work deserves additional attention" (Can, et. al., 2016:1). Abstracts are condensed versions of the full text of a journal article.

To account for the significance and importance of abstracts, a standard framework for abstract writing was established as early as the 1970s; it consists of the following sections: Introduction, Methods, Results, and Discussion (IMRAD) (Ming, 2006). Although this structure is known by many other names, it is commonly abbreviated as IPMRD (Introduction, Purposes, Methods, Results and Discussion). As stated by Hyland (2004) there is a close relationship between abstract organization and moving categories. These categories are as follows: introduction, methods, findings, and conclusions in a typically linear order. All four of the last structural parts make for excellent abstracts, and they should be included in any abstract writing (Jozsef, 2001).

As stated by Bachir (2018), the abstract should: (1) express the main objective and scope of the inquiry, (2) describe the method utilized, (3) summarize the results, and (4) present the key conclusions. Bachir (2018) further recommends that the summary should include: Abstract is solely distinguished by the use of the simple past tense because it is concerned with research that has already been completed. The next component of writing journal papers that students must learn is the methodological portion of the article. Methodology is the primary framework that serves as the foundation for systematic research design and development, and it is a branch of science that analyzes the processes by which research procedures are conducted (Mannzilati, 2017). When writing journal articles, a student must be familiar with the scientific approach. The scientific procedures used in creating journal articles comprise the following steps: (1) collecting data, (2) formulating hypotheses, (3) conducting hypothesis testing, (4) drawing conclusions, and (5) submitting reports to the journal (Mack, 2018).

3. Methods

3.1. Design

The study employs a 2x2 factorial quasi-experiment design (Seltman, 2018); Cresswell, 2014; Chirtensen, 1977). An action on one or more variables that is conducted simultaneously in order to assess the influence of each variable on the dependent variable generated by the interaction of several variables is defined as a factorial design, according to Sukardi (2009). Each bariaber contains two values, namely experimental variables and attribute variables, which have been divided into two levels, in this case employing textbooks and not utilizing textbooks, which have been separated into two levels (Riadi, 2016). In Indonesia, the Islamic University of Surakarta was the site of this investigation. The research was carried out between August and September of 2021.

3.2. Sample

The EFL students involved in this research was 232 people participating in the journal writing course. Of 232 students 142 students, 82 (57.7%) females and 60 (42.3%) male were selected as sample. The sample was divided into four groups identified as groups A, B, C, and D. Simple random sampling was employed to

choose the sample because it does not take into account the existing strata in the population when selecting the participants (Sugiyono, 2010). Students were given four types of treatment: (1) Group A employs the theme technique with textbooks, (2) group B received thematic method with no textbooks, (3) group C employs conventional methods with textbooks, and (4) group D used conventional methods with no textbooks. See table 1.

Table 1. Sample proportion of the study

No	Group	Sample	Male		Female		Treatment
			M	%	F	%	
1	A	36	16	11.3	20	14.1	Thematic writing + textbook
2	B	32	14	9.86	18	12.68	Thematic writing + no textbook
3	C	36	15	10.56	21	14.79	Conventional + textbook
4	D	38	16	11.3	22	15.49	Conventional + no textbook
	Total	142	61	42.96	81	57.04	

3.3. Instrument

The instruments of this research are of two kinds, a test consisting three aspects of writing, dimension (10 indicators), language (3 indicators) and technical (3 indicators) and a checklist of the IMRAD section. (See table 1 and table 2).

The first instrument had 16 questions. The correct answer was 1 and the incorrect response was 0, enabling a scoring range of 0 to 16. The test to measure the mastery of writing journal articles was tested for validity and reliability. Results of test the validity by using an empirical product moment correlation connecting the item scores with the total score was .82, while the reliability test uses the R-11 test was .056. Both validity and reliability test results indicate that all items of the instrument were valid and reliable.

Table 2.

Test Indicators for the Ability to Write Journal Articles

Variable	Dimension	Indicator	No Question
Journal Article Writing Ability	Journal element	Title of paper	01
		Author, affiliate, email address	02
		Abstract and keywords	03
		Introduction	04
		Theory	05
		Method	06
		Result	07
		Discussion	08
		Conclusion	09
		References	10
	Language	Use of various languages	11
		Spelling adherence	12
		Alinea's diversity of writing styles	13
	Technical	Sentence Structure	14
		Neatness	15
		Typographical error rate	16

Source: Readings from various theories

The second instrument is a checklist to identify components of IMRAD from the students' writing. See table 3.

Table 3. Checklist of IMRAD.

No	IMRAD	Criteria
1	Introduction	Background and context, Gaps, Research questions
2	Review of theories	Defining variables, review of previous studies
3	Methods	Design, sample, instrument, data collection, data analysis
4	Results	Answer to the research questions
5	Discussion	Interpreting results, filling the gaps, novelty
6	Conclusion	Summarizing results, reemphasizing novelty, suggestions
7	References	Recent references, journal references, proper APA 7 th style

3.4. Procedures and Data Collection

This study used factorial design to which four treatments are given to four groups. The main treatment is thematic writing and the second treatment is thematic textbook. Teaching thematic writing and using thematic textbook is used in combination to each group. The combination looks like:

- Thematic writing and thematic textbook
- Thematic writing without thematic textbook
- Thematic writing with conventional textbook
- Thematic writing without conventional textbook

Each group received treatment 12 times, 6 times through face-to-face meetings and 6 times through online meetings conducted in two months. In the pandemic situation, the university in general conducted online teaching, however for the specific goal, face-to-face meetings were allowed in a condition that Covid-protocols were strictly implemented. After treatments, data were collected in two weeks; in the first week group A and group B were given a test; and in the second week, a test was given to Group C and Group D. Results of test were tabulated and analyzed using SPSS software. See diagram 1.

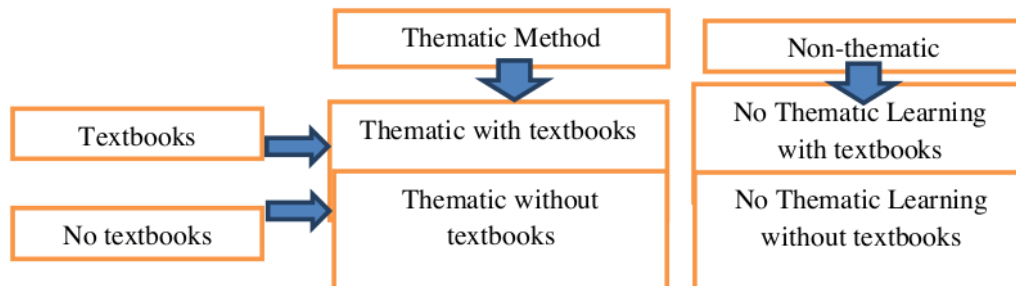


Diagram 1. Research design

3.5. Data Analysis Technique

Data of this study were analyzed using SPSS package. The analysis includes descriptive and inferential statistics and t-test analysis (Riadi, 2016; Sukardi, 2009). Descriptive statistics include minimum and maximum value, mean, mode, media. Inferential statistics include a multivariate test, using a two-way analysis of variance. The purpose of analysis was to test the hypotheses of this study (Christensen, 1977). Prior to the hypothesis testing through the analysis of variance, the requirements of classic assumption test including normality and homogeneity were tested. When all the requirements are met, the hypotheses can be tested.

4. Results and Discussion

4.1. Normality Test

It is necessary to test for normality and homogeneity in order to satisfy the assumptions that must be met by the analysis of variance test. Prior to evaluating the hypothesis, it is required to test the conditions that must be met. In order to pass the prerequisite test, you must pass both the normalcy test and the homogeneity test. These are the results of the normality and homogeneity tests, which can be seen in tables 4 and 5.

Table 4.
Normality test

Description	Thematic method with textbooks	Thematic method without textbook	Conventional methods with textbooks	Conventional method without textbook
Kolmogorov-Smirnov Z	2,602	1,347	1,627	1,522
Asymp. Sig. (2-tailed)	.074	.053	.0650	.062

Source: Primary Data Analysis Results processed 2021

Statistical significance is greater than 0.05 in all cells in Table 4. As a result, it may be inferred that the distribution of all cells is normal. Sample normality does not depart from the population's normality, hence the chosen sample has accurately reflected its population.

4.2. Homogeneity Test

It's shown in Table 5 whether the significance value (p) is greater than 0.05, which suggests that each data group comes from a population that is homogeneous. If the significance value is less than 0.05, it's shown that each data group comes from an individual population with various variances (not homogeneous).

Table 5.

Homogeneity test with 4 cell

	Levene Statistic Significance	
	Thematic Method	Conventional Method
With Textbook	0.553	0.564
No textbooks	0.435	0.432

Source: Primary Data Analysis Results processed 2021

If the Lavene test results are significant, the significance value is above 0.05, as shown in Table 5. Thus, it may be argued that the four groups of thematic techniques with textbooks, thematic methods without textbooks, conventional methods with textbooks, and conventional methods without textbooks are all similar in variance.

4.2. Hypothesis Testing

The data on the results of the scientific journal writing mastery test in classes that use thematic and conventional methods both using textbooks and not using can be seen in Table 6.

Table 6.
Data on the test results of journal article writing skills

Description	Thematic method with textbooks	Thematic method without textbook	Conventional methods with textbooks	Conventional method without textbook
Mean	15.6000	11.0250	8.2750	4.8000
Median	16.0000	11.00000	8.0000	5.0000
Mode	16.00	11.00	8.00	5.00
Minimum	14.00	9.00	7.00	4.00
Maximum	16.00	12.00	9.00	6.00

Source: Primary Data Analysis Results processed 2021

Table 6 shows that different competences appear among achievement on journal article writing using thematic methods with textbooks, thematic methods without textbooks, conventional methods with textbooks, and conventional methods without textbooks. The mean scores are: students who received thematic method with textbook (15.6), thematic methods without textbook (11.02), conventional teaching with textbook (8.27), and conventional teaching without textbook (4.80).

4.2.1. Hypothesis 1

Comparison of competence in writing journal articles between thematic and conventional methods is presented in table 7.

Table 7.
Comparison of competence in writing journal articles between thematic and conventional methods

Learning model	Average	F Count	Sign
Thematic	13.2	53,076	0.000
Conventional	6.5		

Source: Results of primary data analysis 2021

Table 7 that indicates Fcount 53.076 $p=0.000$ significance means H_0 is rejected. This implies that students who write journal articles using the theme method vary from students who learn to write journal articles using conventional methods. Substantially, thematic base treatments is better than conventional treatments.

4.2.2. Hypothesis 2

Table 8 indicates the comparison of competence in writing journal articles between using thematic and conventional methods using textbooks and without textbooks.

Table 8. Comparison of competence in writing journal articles using textbooks

Instructional Media	Average	F Count	Sign
Textbook	10.2	391,447	0.000
No textbook	8.5		

Source: Results of primary data analysis 2021

Table 8 showing the Fcount 391.447, $p=0.000$ ($p = 0.005 < 0.050$) means H_0 is rejected. The results admit that students who write journal articles using thematic and conventional methods have an advantage over those who study from textbooks.

4.2.3. Hypothesis 3

The average ability to write journal articles for students who study using thematic and conventional teaching methods without using textbooks as indicated in table 9.

Table 9.

The average ability to write journal article manuscripts for students who do not use textbooks

Learning model	Average	F Count	Sign
Thematic	11.12	431.342	0.000
Conventional	7.25		

Source: Primary Data Analysis Results processed 2021

Table 9 shows that Fcount 431.342 and a significance value of 0.000 are identified. H_0 is accepted because $p = 0.005 > 0.05$. Thus, students who write journal article using conventional textbooks perform better than those who write without textbooks.

4.2.4. Hypothesis 4

Table 10 reveals that the two-way ANOVA test yielded an Fcount of 23,318 and a significance level of 0.000 as shown by the findings. Here, H_0 is rejected because $p < 0.05$, showing that students' ability to write journal article improves when they employ both learning models and learning media.

Table 10
Two Path Anova Test Results

Teaching_method	Media_instruction	mean	F Count	Signi
Thematic Method	Textbook	15,600	23,318	.000
	non-textbook	11,025		
Conventional Method	Textbook	8,275		
	non-textbook	4,800		

Source: Primary Data Analysis Results processed 2021

ANOVA results in table 10 show that students who use textbooks have an average capacity to write journal articles of 15,600, which is higher than students who do not use textbooks, who have an average ability of 11,025. The average ability of students to write journal articles in conventional classes using textbooks is 8,275, which is greater than the average conventional method without using textbooks, which is only 4,800.

The graph of the interaction between the learning model and the ability to compose journal article manuscripts for students can be seen in Figure 2.

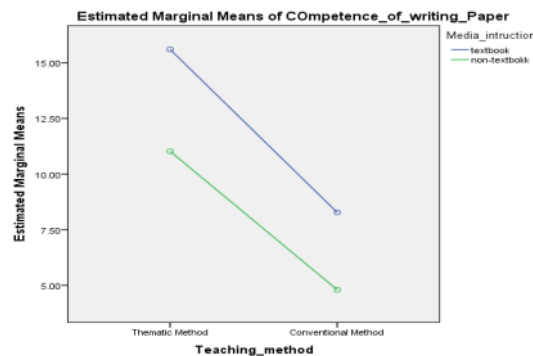


Diagram 2. Interaction of Learning Models, Learning Motivation, and Learning Outcomes

The graph above shows that the thematic teaching method using textbooks is

better than the thematic teaching method without textbooks. Thematic teaching methods without textbooks are better than conventional methods with textbooks. The conventional method with textbooks is better than the conventional method without textbooks.

4.3. Description of the IMRAD

The results of the IMRAD study from four different groups are presented in Table 11. The findings reveal how well each group performs in terms of developing components for IMRAD.

Table 11. Checklist of IMRAD.

No	IMRAD	A (N=36)		B (N=32)		C (N=36)		D (N=38)	
		F	%	F	%	F	%	F	%
1	Introduction	30	83.3	23	71.2	26	72.2	24	63.1
2	Review of theories	30	83.3	23	71.2	26	72.2	24	63.1
3	Methods	28	77.8	20	62.5	24	66.7	18	47.4
4	Results	30	77.8	22	68.8	22	61.1	18	47.4
5	Discussion	26	72.2	20	62.5	22	61.1	18	47.4
6	Conclusion	28	77.8	22	68.8	22	61.1	19	50
7	References	30	83.3	20	62.5	22	61.1	19	50
	Average	28.9	70.1	21.4	66.8	23	65.1	20	52.6

Table 11 suggests results of analysis in IMRAD components. The data show that students who received thematic writing and textbook achieved 70.1% and students who received thematic writing without textbook gained 66.8%. Respectively, students who received thematic writing and textbook achieved 83.3% in Introduction and review of theories sections, 77.8% on Methods and Results sections, 77.2% on discussion, 77.8% on conclusion and 83.3% on references.

In addition, students who received conventional teaching with textbook indicate 65.1% achievement and those who received conventional teaching without textbook is 59%. Components of IMRAD are achieved by students with conventional teaching and textbook as follows: Introduction and Theories 72.2%, methods 66.7%, Results, Discussion, Conclusion and references are 61.1% each. Students who received conventional teaching without textbook respectively show their achievement on IMRAD components as follows: Introduction and Theories 63.1%, Methods, Results, Discussion 47.4% each, Conclusion and references 50%.

The results of analysis address discussion in terms of improvement of writing as the results of thematic teaching and textbook. Accordingly, achievement of groups in IMRAD components is also addressed.

In improving students' ability to write scientific journal articles, internal and external factors appear (Okoro, 2016). Internal factors include intelligence, motivation, interest, passion, and others. The external factors include the ability of lecturers to guide, facilities, infrastructure, learning environment, good examples, learning models, use of textbooks, and others (Rugut & Osman, 2013).

Thematic learning is much better than conventional, because students are directly given examples according to the themes that will be raised in writing scientific journal articles (Dilek, 2007). In addition, in thematic learning, lecturers directly provide directives according to students' difficulties when raising a particular problem (Mustikasari, et al., 2020).

Thematic-based teaching methods using both textbooks and non-textbooks have the capacity to improve the ability to compose journal articles. The use of fixed teaching methods is also able to improve the competence of Indonesian language education students in increasing their ability to compose journal articles (Montebon & Orleans, 2019).

The use of textbooks also has great benefits in improving students' abilities in compiling scientific journal articles because in the book there are complete instructions on how to compose articles well (Mustikasari, et al., 2020; McCollum, 2009). The book also explains the steps that must be taken by students in compiling scientific journal articles (Min, 2012; Sudarwan, 2013).

In textbooks related to the method of compiling scientific journal articles, it also explains various strategies that can be carried out by students so that students do not get caught up in data analysis but must focus more on the content of the script that obeys the rules of language (MacQuarrie, et al., 2015). Utilizing a variety of languages correctly, in accordance with linguistic provisions, the contents of the journal manuscript will be easy to understand for all readers, because it avoids misinterpretation (Chen, 2012; Kadarwati, et al., 2017).

The average result shows that students who are given learning with thematic methods using textbooks show the best results. The second best is students who get thematic learning methods without textbooks. The third best order is the conventional method using textbooks. The last rule (worst) is the conventional method without using a textbook. Therefore, when Indonesian lecturers want to improve students' abilities in following scientific journal articles, the lecturers should use thematic learning methods by using textbooks that are relevant to the field they teach (Dilek, 2007).

This study provides two gaps the previous studies do not indicate. First, thematic writing and thematic textbooks are not used before to improve argumentative writing for EFL students. The recent study applies both thematic writing and thematic textbook to improve students' academic writing. Second, previous studies in writing for undergraduate EFL students are not present that examine journal article writing. Third, IMRAD as a model of research paper drives students to argue in creative way. Though not perfect, themes to discuss in the model has created writing model that is new. This current study specifically looks at the students' performance on journal article as the academic writing. The gaps being identified in this study therefore provides theoretical novelty, methodological novelty and result novelty. Theoretical novelty has been contributed from the inclusion of thematic writing and journal article writing as part of argumentative writing for undergraduate students. Methodological novelty emphasizes the uses of factorial

design as the core research methods. Result novelty thematic writing and thematic textbook contributes significant results not only in improving students' performance in academic writing, but also it indicates determinants how writing strategies, steps of argumentative writings and journal articles that uses IMRAD as the core format of research papers are clearly identified.

5. Conclusion

The present study sought an answer to the research question of how teaching thematic writing and a thematic writing textbook increase journal article writing. In general, teaching writing using themes-based approach is better than conventional approach. Similarly, teaching writing using a textbook is better than without textbook. The use of thematic teaching model and thematic textbook are successful to indicate internal factors such as intelligence, motivation, interest and passion, and the external factors that include lecture guide, sample writing, learning models and use of textbook. Thematic learning is much better than conventional, because students are directly given examples according to the themes that will be raised in writing scientific journal articles. Specifically, IMRAD components as the main focus of journal article writing are also improved through the thematic writing and thematic writing textbook.

This article centers its novelty on application of the thematic writing models into practices on journal article writing using IMRAD theories, IMRAD sections are developed, thematic textbook is adapted in writing dimension and the online treatments of writing is delivered. This study, however, has its limitation in that the writing papers the students produce are not the main focus of analysis and restricted elaboration on how IMRAD strategies are performed. The authors suggest that product of writing be evaluated as the main data. The future research is recommended to conduct content analysis to see the in-depth analysis on the structure of journal article writing. A survey method that recruits larger number of EFL students is suggested to conduct.

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