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Improving Argumentative Writing through IMRAD to Indonesian EFL Learners

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Abstract

Indonesian students face the challenge of writing good journal articles, much of which is due to a lack of appropriate writing skills. The current study aimed to find out the difference between writing journal articles through thematic learning models or conventional learning models, as well as using each of these models with or without 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 showed that (1) students who were taught using thematic learning models without text books had a significantly different mastery of writing journal articles than those taught through conventional learning models using textbooks. This study elaborated how IMRAD (Introduction, Methods, Results and Discussion) model for article writing could be performed on students. The study thus concluded that a theme-based approach was better than conventional approach in teaching writing. The study also helped discover internal factors such as intelligence, motivation, interest and passion, and the external factors that include teachers' guide, sample writing, learning models and use of textbook. The study recommends evaluating the subject of thematic writing in a greater dimension or to conduct a content analysis to derive an in-depth analysis of the structure of journal article writing.

Keywords: journal article writing, thematic model, conventional model, textbook, IMRAD,

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 (Veerappan, Suan, & Sulaiman, 2011), poor guidance (Sakkir, 2020), not optimal rhetorical of journal writing (Nückles, Roelle, Glogger-Frey, Waldeyer, & Renkl, 2020), a low level of student creativity (Haerazi, Irawan, Suadiyatno, & Hidayatullah, 2020), weak writing strategies (Shegay, Orazova, & Krivosheeva, 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, Miñoza, & Alieto, 2019), low interest in writing due to lack of motivation, lecturer factors, environment, publishing (Rofiqo, Windarto, & Wanto, 2018), reasoning process and ideas are not well developed (Sardila, 2015), lack

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of reading activity and students' low ability to write journals (Widodo, Indraswasti, Erfan, Maulyda, & Rahmatih, 2020), and recovery models whose formulations are adapted (Susanti, 2015).

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. In this context, thematic-based learning is one of the most effective learning approaches for increasing students' knowledge, attitudes, and skills throughout the learning process. While Problem Based Learning (PBL) learning is still one of the thematic learning styles that may be applied to various situations, this technique arranges students into small groups who work together to solve a problem while also listening to a teacher'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 than being 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 fourth revolution in education, thanks to advancements in technology, pedagogy, and innovative tactics (Kalimullina, Tarman, & Stepanova, 2021; Shatunova, Bozhkova, Tarman, & Shastina, 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, Oyelere, Suhonen, & Tukiainen, 2019; Hwang, 2014; Olawale, Mutongoza, Adu, & Omodan, 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 literature and student debates have arisen because of the increasing growth of the area.

It is very important to do a thorough review of 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 are 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" (Ming, 2006). In other words, 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 during 2012-2019. The study determined how Chinese researchers began researching intelligent learning, what the current trend was, and what contributions had there been to scholarly publications. This transition is even more relevant today because of unforeseen circumstances that created an emergency in the world of education, for example, where formal learning is not possible due to school closures. 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.

Problem statement and research questions

In particular, due to 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, Hariyadi, & Hidayati, 2021; Tarman, 2020), especially because the learning process is becoming increasingly limited and lecturers' delivery of material is becoming less exploratory (Bhakar & Sikarwar, 2014). Increased effectiveness of textbooks regarded capable of growing students' abilities in academic writing, particularly articles for journal publication (Hidayati & Astuti, 2020).

This new multi-literacy era sees a shift from printed pages to multiple online formats, including online reading, navigation and online research. 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 computer, though students reported issues of eye fatigue and dealing with lengthy texts when reading e-books, yet this still helped students enhance their abilities to write journal articles (Huang, 2013). 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 can be carried out (Lane, 2013; Meiszner, 2011).

In each case, the claim is made that thematic 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 is limiting the learning process in increasingly limited ways. This necessitates teachers 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).

This study 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. The study figures out different questions that people ask; for instance, "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?" In order to find an answer to these questions, the present study framed the following 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?

Theoretical Review and hypotheses development

- *Thematic Learning*

The delivery of competencies that are focused on a single theme is referred to as thematic-based learning. It requires integration of various components of the curriculum because it eliminates fragmentation from the entire teaching and learning process. Thematic instruction is known to be a powerful instrument for implementing the curriculum in the classroom. Pedagogical themes help students enhance their cognitive capacities, such as their ability to think creatively and critically. Montebon and 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 stimulating 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, Priscylio, Hartati, & Sopandi, 2020).

The most effective technique to contextualize learning methods is through thematic-based learning strategies. Theme-based instruction aids students in better understanding of their specific learning styles and provides cooperative and interactive learning opportunities for both students and teachers (MacQuarrie, Nugent, and Warden, 2015). 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 and encouraging 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 (2021); MacQuarrie, Nugent, and Warden (2015).

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 have learned in the classroom to real-world problems, they retain more of what they've learned. Overarching themes help students identify and develop connections between other students and the environments surrounding them, and leads them to build bridges between topics, subjects, and abilities in a more creative and innovative way (Gazioğlu & Güner, 2021; Keefer & Haj-Broussard, 2020). Themes can be drawn from anything that is relevant to the learners, 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.

Thematic instruction also 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 is important for teachers to understand how students 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. 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 Gardner (2011) argues, there are eight sorts of intelligence: verbal and written intelligence, logical-mathematical intelligence, visual-spatial intelligence, kinesthetic-physical Intelligence and musical Intelligence.

There are several advantages and benefits of using thematic-based learning approaches rather than separate learning, such as students would find a theme-based topic most intriguing and encourage them to be more eager and intriguing during the learning process. it will also arouse their attention and drive more conversation and problem solution to use the topic as a captivating theme. Additionally, this makes students' connections deeper; learning becomes a continuous process in which the brain seeks to link new experiences; and incorporating a theme into a lesson plan helps to reinforce and reflect the way people naturally learn.

Specifically, the benefits of integrated theme based learning also include: (1) it is easier to modify student learning activities and experiences appropriate to the degree of knowledge required; (2) learning can be tailored to the interests of the participants; (3) learning activities can be 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 & Malawi, 2017).

Thematic learning, on the other hand, has downsides or flaws that need to be addressed. For instance, 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, which are unfortunately lacking on general basis; (2) thematic learning necessitates students to think independently, both academically and creatively, which is also lacking; (3) thematic learning facilities and reading sources must be more numerous and varied, and supported by internet facilities; and (4) there is a lack of implementation of a flexible curriculum.

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 to implement it; asking for it; making use of it; and drawing conclusions from it. 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 (encouraging observation); (3) possessing analytical skills (pushing of analysis), and (4) communicating findings to others (requiring 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.

- *Instructional Media*

When media is incorporated in 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, Clark, and Bruck (2014), gives verbal information that the learner can digest efficiently, emphasize upon the information, and capture 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 (Mayer, 2014) and places a stress on working memory (Tyson, 2021).

Besides the media already mentioned, textbooks are a common tool in the educational process. Educators and lecturers alike rely on textbooks as a source of theoretical information for their classes, whether they are in elementary school or a four-year university program. 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. These textbooks contain teaching resources and a collection of instructional learning materials organized in a systematic manner, both written and unwritten, that suggest what knowledge, skills, and attitudes need to be learnt. Bhakar & Sikarwar (2014) assert that teachers frequently resort to textbooks to increase engagement with the overall learning objective, 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 Bhakar & Sikarwar, 2014). Due to the wide range of professional requirements that future students may face, it may be difficult to develop a general textbook.

- *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, which 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 (Bashir & Tang, 2018). When it comes to actually reading a document, according to Hyland & Tse (2004), the abstract 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". Abstracts are condensed versions of the full text of a journal article (Bashir & Tang, 2018).

To account for the significance and importance of abstracts, a standard framework for abstract writing was established as early as 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 & Tse (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 (József, 2001). Bashir & Tang (2018) opine that an 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. Bashir & Tang (2018) further argues that an 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 section of the article. The 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).

Based on aforementioned review, the study framed the following hypotheses

H_1: Thematic-based learning methods are better at improving students' ability to write journal articles than conventional learning methods
H_2: The application of thematic-based learning methods can improve students' mastery in writing journal articles better than conventional groups of students who use textbooks
H_3: 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
H_4. There is an interaction effect between the use of learning models and the use of textbooks on the ability to write scientific journal articles.

Method

- *Research Design*

The study employed a 2x2 factorial quasi-experiment design (Christensen, 1977; Creswell & Creswell, 2017; Seltman, 2018). This design, also defined as a factorial design, requires 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 (Sugiyono, 2010). Each variable contains two values, namely experimental variables and attribute variables, which have been divided into two levels which, in the current context, are employing textbooks and not employing textbooks, which have been separated into two levels (Riadi, 2016). The Islamic University of Surakarta, Indonesia was the site of this investigation. The research was carried out between August and September of 2021.

- *Sampling*

The sample involved in this research comprised EFL students attending a journal writing course in the university. Out of the total population of 232 students, 81 (57.7%) females and 61 (42.3%) male participants were selected as sample of the study, making a total of 142 students. 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). The sample was divided into four groups identified as groups A, B, C, and D. Students were given four types of treatment: (1) Group A employed the thematic technique with textbooks, (2) Group B received thematic method with no textbooks, (3) Group C employed conventional methods with textbooks, and (4) Group D used conventional methods with no textbooks. Table 1 summarizes the sample proportion of the study.

Table 1. *Sample proportion of the study (N=142)*

No	Group	Sample	Male		Female		Treatment
			N	%	N	%	
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 method + textbook
4	D	38	16	11.3	22	15.49	Conventional method + no textbook
	Total	142	61	42.96	81	57.04	

- *Research Instrument*

Two kinds of instruments were used in this study: a test comprising three aspects of writing: journal elements (10 indicators), language (3 indicators) and technical (3 indicators). The second instrument was a checklist to determine the use of IMRAD (Table 2 and Table 3). 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. This test which measured the mastery of writing journal articles was tested for validity and reliability. The validity test results used an empirical product moment correlation connecting the item scores with the total score of 0.82, while the reliability test used the R-11 test getting a score of 0.56. Both validity and reliability test results indicated 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 of Questions
Journal Article Writing Ability	Journal element	Title of paper	01
		Author, affiliation, 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
		Sentence Structure	14
	Technical	Neatness	15
		Typographical error rate	16

Source: Readings from various theories

The second instrument was a checklist to identify components of IMRAD from the students' writing. Table 3 summarizes the criteria of the checklist.

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 7th style

- *Research Procedures and Data Collection*

This study used factorial design to which four treatments were given to four groups. The main treatment was thematic writing and the second treatment was thematic textbook. Teaching thematic writing and using thematic textbook were used in combination to each group, in accordance with the hypotheses of the study. This resulted in the following combination:

- 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 treatment, data were collected in two weeks; in the first week Group A and Group B were given a test; and in the second week, the test was given to Group C and Group D. Results of test were tabulated and analyzed using SPSS software. Figure 1 presents the scheme of data collection.

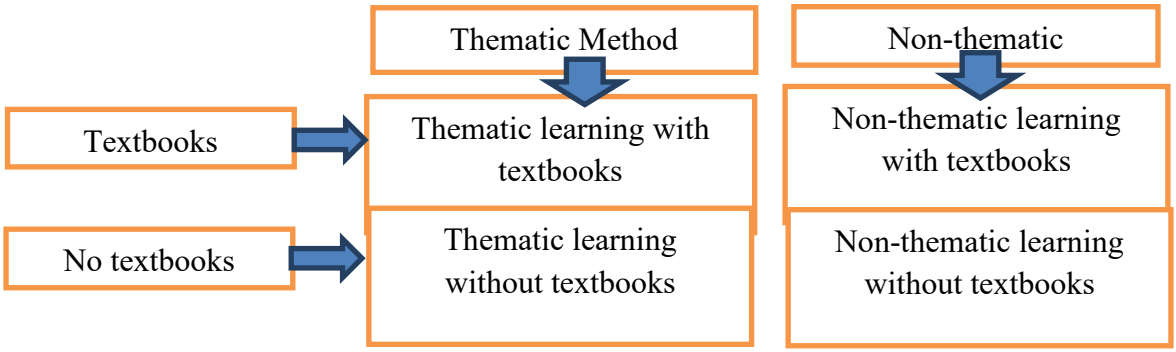

Figure 1. *Research design and data collection*

- *Data Analysis*

Data of this study was analyzed using SPSS package. The analysis included descriptive and inferential statistics and t-test analysis (Riadi, 2016). Descriptive statistics included minimum and maximum value, mean, mode, media while inferential statistics included 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 were met, the hypotheses were tested.

Results

Normality and Homogeneity Tests

Normality and homogeneity tests were done to satisfy the assumptions made in the analysis of the variance test. Prior to evaluating hypotheses, it is required to pass the prerequisite test, for which both normalcy test and homogeneity test are conducted. Table 4 and Table 5 present the results of the two tests.

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)	0.074	0.053	0.065	0.062

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 accurately reflected its population.

Table 5 presents that 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 suggests that each data group comes from an individual population with various variances (not homogeneous).

Table 5. *Homogeneity test with 4 cells*

	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.

Hypothesis Testing

Table 6 presents the data on the results of the scientific journal writing mastery test in classes that use thematic and conventional methods, with and without textbooks.

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	15.60	11.02	8.27	4.80
Median	16.00	11.00	8.00	5.00
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).

Hypothesis 1

A 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	Significance
Thematic	13.2	53.07	0.00
Conventional	6.5		

Source: Results of primary data analysis 2021

Table 7 indicates the Fcount 53.076 with p=0.000 significance. This suggests that H1 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, this also proves that thematic base treatments are better than conventional treatments.

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	Significance
Textbook	10.2	391.447	0.000
No textbook	8.5		

Source: Results of primary data analysis 2021

Table 8 shows the Fcount 391.447 and p=0.000 (p = 0.005 <0.050),which suggest that H2 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.

Hypothesis 3

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

Table 9. Average ability to write journal articles of students who do not use textbooks

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

Source: Primary Data Analysis Results processed 2021

Table 9 shows the Fcount 431.342 and a significance value of 0.000. Thus, H3 is accepted because p = <0.005. Thus, students who write journal article using conventional textbooks perform better than those who write without textbooks.

Hypothesis 4

Table 10 reveals that the two-way ANOVA test yielded an Fcount of 23.318 and a significance level of 0.000. Hence, H4 is also 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	Significance
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.

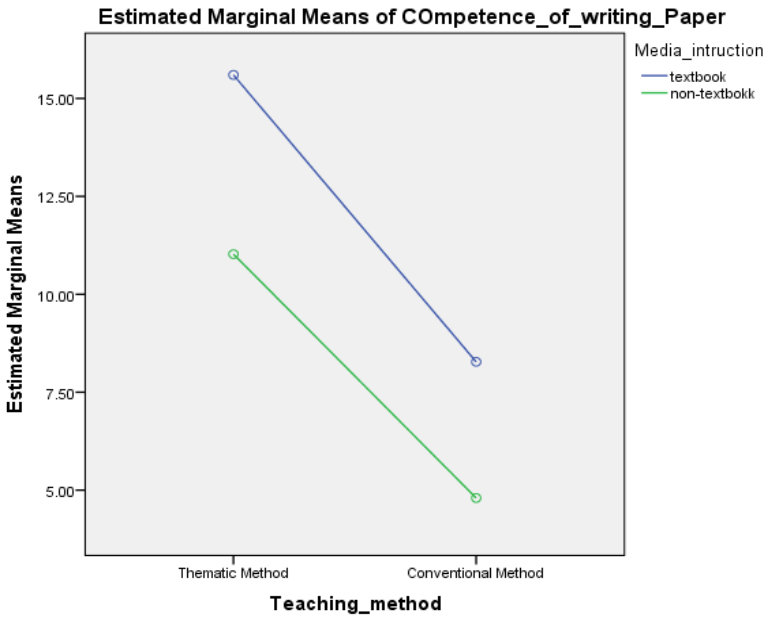

Figure 2. *Interaction of Learning Models, Learning Motivation, and Learning Outcomes*

The graph in Figure 2 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.

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 performed 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 the students' utilization of 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 gets 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 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% each.

Discussion

The results of the study are evidence of the level and extent of improvement in writing through the use of thematic teaching and a textbook. The achievement of groups in IMRAD components suggest the kind of strategies that can be taken care of. For instance, improving students' ability to write scientific journal articles, there is a need to take into account internal and external factors (Hyland & Tse, 2004; Bashir & Tang, 2018). Internal factors include intelligence, motivation, interest, passion, and others. The external factors include the ability of teachers 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, teachers 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 also have the capacity to improve the ability to compose journal articles. The use of fixed teaching methods further improves the competence of Indonesian language education students in increasing their ability to compose journal articles (Montebon & Orleans, 2019).

There are also several benefits in the use of textbooks to improve students' abilities in compiling scientific journal articles. One, there are complete instructions in a textbook on how to compose good articles (McCollum, 2009; Mustikasari et al., 2020); the book also explains the steps that must be taken by students in compiling scientific journal articles. Moreover, textbooks related to the method of compiling scientific journal articles, also explain various strategies that can be carried out by students in order to avoid problems of data analysis, and help them focus more on the content of the script that obeys the rules of language (MacQuarrie et al., 2015). If the textbook on journal writing utilizes a variety of languages, in accordance with linguistic provisions, the contents of the manuscript would be easier to understand by all readers, as it will help avoid misinterpretation (Kadarwati & Malawi, 2017).

The results of the study reveal that students who are given learning with thematic methods and the use of textbooks achieve best results. The next preferable method to achieve good results is seen in thematic learning methods without the use of textbooks. The third in this order is the conventional method using textbooks, followed by the last one, that of the conventional method without using a textbook. This kind of awareness about methods would help the Indonesian teachers to choose the best one to improve their students' abilities in writing articles for scientific journals. They could also choose the best teaching and learning methods that are relevant to the field they teach (Dilek, 2007).

This study has addressed a few research gaps that previous studies did not pay any heed to. First, thematic writing and thematic textbooks were not used before to improve argumentative writing for EFL students. The current study tested the use of both thematic writing and thematic textbook to improve students' academic writing. Second, previous studies on improvement of writing for undergraduate EFL students did not examine the domain of journal article writing. Third, the current study used IMRAD model for writing research papers, that was never recommended in any previous study. Moreover, this model also helped students to argue and discuss upon themes in a creative way.

The current study also specifically looks at the students' performance on journal articles as academic writing. The gaps being identified in this study therefore would provide theoretical novelty, methodological novelty and result novelty. Theoretical novelty would contribute in the form of inclusion of thematic writing and journal article writing as part of argumentative writing for undergraduate students. Methodological novelty would emphasize the uses of factorial design as the core research methods. Result novelty in thematic writing and thematic textbook would contribute significant results not only in improving students' performance in academic writing, but also in determining writing strategies, steps of argumentative writings and identifying journal articles that use IMRAD as the core format of research papers.

Conclusion

The present study sought an answer to research questions whether teaching thematic writing using thematic writing textbook increases journal article writing. The study results found out that a theme-based approach was better than conventional approach in teaching writing. Similarly, it was also found that teaching writing using a textbook was better than teaching without a textbook. The study also helped discover internal factors such as intelligence, motivation, interest and passion, and the external factors that include teachers' guide, sample writing, learning models and use of textbook. Thematic learning was found much better than conventional, because students were directly given examples according to the themes that would be raised in writing scientific journal articles. Specifically, IMRAD components as the main focus of journal article writing were also improved through the thematic writing and thematic writing textbook.

This study is significant in its novelty of application of thematic writing models into practices on journal article writing using IMRAD theories and IMRAD sections, adaptation of thematic textbook in writing dimension, and online treatment of writing methods. This study, however, faced the limitation of discussing only the method of writing papers by students; moreover, it was also restricted to testing the IMRAD strategies. The authors suggest that the subject of thematic writing be evaluated in greater dimensions in future research. The study recommends to conduct content analysis to see the in-depth analysis on the structure of journal article writing. A survey method on a larger sample of EFL students is also suggested.

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