



## **Argument Mapping with Translanguaging Pedagogy: A Panacea for EFL Students' Challenges in Writing Argumentative Essays**

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In recent years, the role of argument mapping (AM) as a tool to assist higher education learners in writing argumentative essays has gained recognition. However, there is a growing interest in exploring the combination of argument mapping (AM) with translanguaging or TLAN to enhance writing performance further, which requires more research. This study investigated the impact of integrating AM with TLAN pedagogy on students' argumentative writing performance. Employing an explanatory, sequential mixed-method research design with a pre- and post-test approach, the study involved 27 third-year English as a Foreign Language (EFL) university students. They participated in 13 sessions of AM with TLAN implementation to support their argumentative writing tasks. Quantitative findings indicated a significant improvement in participants' writing content and writing coherence between the pre- and post-test stages. When ANOVA was employed, significant differences between one quiz score to those of the other quizzes were exposed. Interestingly, despite being EFL learners, the participants perceived TLAN as a normal and non-disrespectful practice in the EFL classroom. Furthermore, qualitative results indicated that the participants welcomed the use of AM with TLAN, finding it beneficial in their writing tasks. Overall, AM with TLAN emerged as a helpful strategy that not only improved argumentative writing skills but also fostered deeper cognitive and linguistic fluency, as well as critical thinking. The study proposes further investigation into AM with TLAN for future research endeavours.

Keywords: argument mapping, argumentative writing, EFL learners, translanguaging pedagogy

### **INTRODUCTION**

Among the four language skills, writing stands out as the most complex skill compared to others (Hasani, 2016; Robillos & Phantharakphong, 2020). It evaluates one's language proficiency, aids in expressing thoughts, and enables effective communication

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with others. EFL learners often perceive writing as intricate since it requires the integration of multiple skills. Robillos and Thongpai (2022, p.1) highlight that EFL learners face challenges in developing effective writing competency in English especially at the university level. Moreover, constructing coherent and logically sound ideas in writing is not a straightforward task (Hasani, 2016). Students need to address various challenging aspects, including understanding the content and target task, establishing logical connections, ensuring coherence, and utilizing appropriate vocabulary (Harrell & Wetzel, 2013; Malmir & Khosravi, 2018; Robillos, 2021). The complexity intensifies when introducing specific writing genres, such as argumentative writing (Hyland, 2013; Robillos & Thongpai, 2022), which involve specialized terms and syntactical structures (Malmir & Khosravi, 2018; Weigle, 2013). These challenges impose a heavy cognitive load on learners (Malmir & Khosravi, 2018; Robillos & Thongpai, 2022). To address this, Sweller (1994) suggests reducing extraneous cognitive load during the learning process to facilitate understanding and acquire new ideas. One effective approach to assist writers in reducing cognitive overload is through mapping techniques (van Gelder, 2007; Robillos, 2021). Since prose writing can be imprecise and unclear at times (Davies, 2014), utilizing maps proves advantageous due to the brain's inclination towards visual processing (Davies, 2014; van Gelder, 2007; Robillos, 2021).

Meanwhile, the process of writing, as advocated by numerous scholars and academics, can be conducted collaboratively to leverage the social aspect of writing (Felton et al., 2009; Klein & Boscolo, 2016; Krajka, 2012; Rogoff, 1990; Trimbur, 2009). According to Krajka (2012), collaborative writing contributes to the learning process. Felton et al. (2009) argue that engaging in deliberation before writing proves significantly more effective than writing individually. Additionally, Rogoff (1990) highlights the enthusiastic support peers and teachers provide in scaffolding students' language during writing tasks. However, a significant challenge arises when considering EFL learners' confidence in using English during collaborative writing, especially from idea generation to peer evaluation. Many universities enforce an English-only policy in classrooms, particularly for students majoring in English language or Teaching English (Robillos, 2021; 2023). The Thai EFL classroom adheres to a similar policy, requiring students to use English exclusively when paired or grouped for idea collaboration or peer critique throughout the class (Robillos, 2023; Robillos & Thongpai, 2022). As a result, learners often refrain from active participation due to their lack of confidence in expressing ideas and thoughts in English. The fear of being ridiculed for incorrect vocabulary usage further deters them from speaking up and leads to passive participation (Robillos, 2022). These negative attitudes significantly hinder the learning process (Nair, 2020; Robillos, 2022).

EFL learners need to develop their communicative skills, enabling them to confidently employ problem-solving strategies when their language proficiency is insufficient (Garcia, 2017). Rather than adopting a strict "English-only" approach, learners should be viewed as resourceful agents with diverse multilingual repertoires and abilities (García & Kleifgen, 2018), emphasizing the importance of nurturing these abilities. To

support writing in the EFL classroom and meet these demands, one potential strategy involves integrating the first language (L1) into the second language (L2) instructional setting, commonly referred to as ‘translanguaging’ (Garcia & Wei, 2014; 2017). Translanguaging (TLAN) allows students to utilize their L1 as a foundation for understanding, generating new ideas, and enhancing cognitive and linguistic fluency. This flexible use of linguistic resources facilitates deeper and critical thinking, fostering meaningful cognitive engagement with writing tasks. Cummins (2000) suggests that knowledge should not solely be assessed based on proficiency in English; therefore, students should be encouraged to use the language they are comfortable with to comprehend concepts and improve their target language skills. Cohen (1995) supports this perspective, noting that L2 learners consistently shift between various language resources. Emphasizing the value of linguistic diversity, L2 learners should be encouraged to employ any of their linguistic resources for educational purposes (Garcia & Wei, 2014; Garcia & Otheguy, 2020). In fact, EFL learning can be seen as a form of bilingual education, where both teachers and students can draw on their L1 to create rich learning opportunities (Turnbull, 2018). Embracing TLAN in the classroom empowers learners and promotes a more inclusive and effective language learning environment.

The existing literature has shown the effectiveness of incorporating TLAN in students' argumentative writing tasks (Licon & Kelly, 2021; Nair, 2020). However, there remains a scarcity of research that focuses on enhancing argumentative writing skills through the use of AM alongside TLAN (Malmir & Khosravi, 2018; Robillos & Thongpai, 2021). Additionally, investigations into the application of TLAN to facilitate students' writing tasks have been relatively underexplored (Chen et al., 2019; Elashhab, 2020). Consequently, there is a research gap to be addressed, specifically regarding the impact of combining AM with TLAN on university students' argumentative writing, particularly concerning the development of writing content and writing coherence. This study aims to contribute to the literature by filling this gap and exploring a relatively uncharted area, especially in the context of Thai education.

## **Literature Review**

### **Using Argument Mapping (AM) in Argumentative Writing**

Argumentative writing, as a writing genre, revolves around navigating the space between the content of arguments and the intended audience. It holds significant importance in both professional and academic contexts (Pessoa, Mitchell, & Miller, 2017). In an academic setting, the ability to construct persuasive arguments using appropriate academic language is crucial, especially when producing context-neutral academic essays across various disciplines (Hirvela, 2017). This complexity arises from the hierarchical, analytical structure inherent in argumentative writing, demanding the systematic support of critical arguments (Applebee, 1984). As a result, argumentative writing is often considered one of the most challenging writing types to produce (Gárate & Melero, 2005; Robillos, 2021; Robillos & Thongpai, 2022). Higher education students arrive at universities with varying writing experiences and levels of exposure to

different forms of argumentation. It is essential for university students to be able to present arguments considering various positions on a given issue or topic. Developing this skill can involve instructing students to write argumentative texts based on diverse sources, where they must work within limited time constraints. In such cases, argument mapping emerges as a potential tool to help students comprehend and organize information effectively. By visually mapping their thoughts, learners can gain a better grasp of their ideas and perspectives (Harrel & Wetzel, 2013; Robillos & Thongpai, 2022). Diagramming ideas can lead to more developed and coherent outputs, stimulating critical thinking (Dwyer et al., 2011; Robillos, 2022) and problem-solving abilities (Robillos & Phantharakphong, 2020), ultimately optimizing their learning performance.

AM, on the other hand, serves as a visual representation of the structure of an argument, facilitating the clear communication of core statements and relationships (Dwyer et al., 2011). It is a valuable tool for learners, aiding them in comprehending and evaluating complex arguments (Davies, 2014; Robillos & Thongpai, 2022). The organization of AM follows a text-based, hierarchical format, where propositions are presented within coloured boxes and interconnected by arrows to highlight the relationships between them (Dwyer et al., 2011). Unlike mind mapping, which primarily focuses on capturing associational relationships between ideas, AM primarily emphasizes inferential or logical connections between claims (Davies, 2011).

It is essential to note that AM plays a crucial role in making arguments intelligible, especially when they are imperfectly expressed in prose (Davies et al., 2021). By employing AM, the inferential construction of an argument can be visually represented in a concise and transparent manner (Davies et al., 2021). Davies and colleagues argue that the process of creating AM offers distinct advantages, allowing students to develop and reconstruct their arguments with heightened clarity and thoroughness (p.115). Below is Figure 1, illustrating the basic and conventional syntax used in AM:

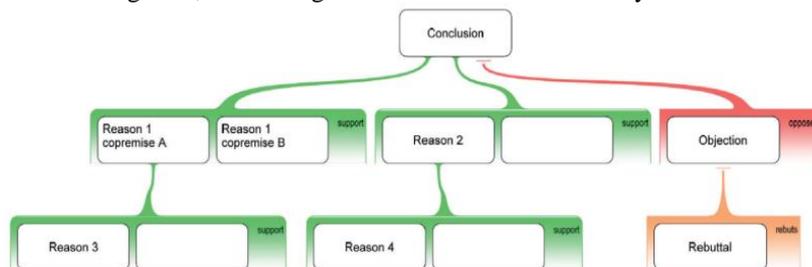


Figure 1  
Basic syntax used in AM

The provided figure illustrates the fundamental and traditional structure employed in AM. At the top most part (pinnacle) of the diagram rests the main conclusion, while the supporting reasons are represented by green-coloured areas, connected to the main conclusion through lines. In the given example, the main conclusion is backed by two reasons, labelled as Reason 1 with co-premise A and Reason 1 with co-premise B. Each

individual premise is depicted inside white claim boxes within the green shaded areas. The use of separate premise boxes allows for individual justifications for each premise, as they work together to form a reason supporting the conclusion. Additionally, objections to specific claims are indicated using a red shaded colour. Writers denote reasons and objections by using terms such as “supports” and “opposes,” respectively (Davies et al., 2021; Ostwald, 2007).

AM serves as a valuable pedagogical tool that enhances the likelihood of meaningful learning (Davies, 2011). A growing body of literature has demonstrated the advantages of incorporating AM into teaching practices. For instance, Harrell and Wetzel (2013) provided support for the effectiveness of using AM to aid EFL text comprehension. The findings of their study indicated that well-designed AMs could enhance critical thinking and writing performance among First Year language learners. Additionally, Malmir & Khosravi (2018) explored the impact of AM instruction on Iranian EFL learners' writing achievement in expository and descriptive essays. The results revealed that argument diagramming strategies significantly improved learners' expository and descriptive writing performances in terms of grammar, coherence, cohesion, and task achievement. However, the strategy did not show the same benefit in developing vocabulary in writing. Expanding upon this line of research, the present study aims to investigate whether AM can lead to improvements in learners' argumentative writing skills. Importantly, this research will contribute to a relatively scarce area of inquiry, specifically within the Thai educational context (Robillos & Phantharakphong, 2020; Robillos, 2021).

### **TLAN Pedagogy and EFL Argumentative Writing**

The term “translanguaging” was initially coined by Williams (1994) to highlight the significance of L1 in the development of L2. Williams challenged the conventional practice of segregating languages and advocated for the beneficial utilization of learners' L1 in the process of learning an L2. Building on this idea, Otheguy et al. (2020) emphasized that TLAN allows individuals to access their complete linguistic repertoire without being constrained by socially and politically defined boundaries of named languages. This flexible use of linguistic resources not only fosters deep and critical thinking but also facilitates a robust cognitive engagement with various tasks. TLAN serves as a scaffold for comprehending lessons, saving time, and maximizing students' linguistic resources during problem-solving, meaning-making, and knowledge construction (Tian et al., 2020). By allowing learners to draw on their entire linguistic repertoire,

Empirical evidence supports the use of TLAN in argumentative writing, as demonstrated by several studies. For instance, Licon & Kelly (2021) conducted research with middle school bilinguals focusing on argumentative writing about biodiversity issues. Employing a socio-scientific issues pedagogical approach, students engaged in discussions to address societal issues related to science. Through TLAN, the teacher facilitated students in constructing and evaluating arguments using a scientific argumentation framework. The written arguments were thoroughly analyzed to

understand the structure of evidence, the referents influencing decisions on socio-scientific issues, and the nature of the conclusions drawn. The findings revealed that TLAN played a significant role in accomplishing the communicative function of the academic task and often enhanced the written arguments among the student writers.

Similarly, Nair (2020) conducted a study investigating the influence of a TLAN approach on learners' argumentative writing in a university in Africa. The study involved 90 First Year students who were divided into experimental and control groups, with 45 students in each group. Data were collected from students' group presentation scores and their argumentative essay scores conducted over four weeks. The results indicated that the use of TLAN positively impacted students' critical thinking abilities and led to improvements in their argumentative writing skills.

While existing studies have demonstrated positive outcomes with the use of TLAN in argumentative writing within multilingual contexts (Licona & Kelly, 2021; Nair, 2020), no prior research has yet investigated the combination of argument mapping with TLAN, which holds potential as a scaffold for promoting a deeper understanding of concepts, evaluating arguments, and encouraging students to translanguage effectively to facilitate their writing tasks and achieve effective writing construction. The present study aims to fill this gap by exploring the impact of AM with TLAN on learners' argumentative writing processes, specifically focusing on the development of writing content and writing coherence. By combining these two strategies, the research seeks to uncover how AM can enhance students' argumentative writing performance when used in conjunction with TLAN. The present study seeks to address the following research questions:

1. How have the pre- and post- argumentative writing tests of the university students in terms of development of writing content and development of writing coherence affected after implementing AM with TLAN?
2. How have the university students' argumentative writing quizzes affected after AM with TLAN was implemented?
3. How do the university students perceive the use of TLAN as a practice for argumentative writing and for L2 learning?
4. What experiences have the participants yielded in improving their argumentative writing after implementing AM with TLAN?

## **METHOD**

### **Method and the Participants**

The study utilized an explanatory sequential mixed-method research design, wherein the researchers first conducted quantitative research, analyzed the results, and then delved deeper into the data using qualitative methods. Furthermore, to investigate the effect of using AM with TLAN on students' argumentative writing, the study employed a single group of pre- and post-test design. Quantitative data were collected to assess

whether the intervention influenced students' argumentative writing performance. Additionally, qualitative data were gathered to explore students' experiences and perceptions after engaging with AM with TLAN during their writing tasks. Additionally, the intervention was conducted over a period of 13 weeks, comprising 11 weeks for the implementation of AM with TLAN and one session each for administering the pre- and post-tests.

The participants in the study consisted of 27 third-year university students, including 6 males and 21 females, within the age range of 20-21. They were purposively selected from a university in the Northeastern part of Thailand. These students were enrolled in the Approaches to Writing subject, which aimed to develop their academic and critical writing abilities. The writing program's learning objective was for students to write argumentative essays that analyze and evaluate multiple arguments. During the intervention, the students were tasked with exploring issues from various perspectives and presenting their own arguments using AM. As some of the students faced challenges in evaluating and analyzing arguments, they were allowed to translanguage to facilitate a deeper comprehension of arguments and support their writing tasks.

#### **Data Collection**

*Pre-writing test.* Before the intervention, participants were asked to complete a pre-writing test. They were required to construct an argumentative essay with a minimum of 250 words within a one-hour timeframe. The writing topic was selected from IELTS writing task 2 topics, ensuring alignment with the themes covered in their "Approaches to Writing subject". The chosen topic underwent a thorough review by three English experts to ensure its cognitive and cultural appropriateness before being used. Preceding the actual writing task, participants engaged in preparatory activities, including brainstorming, posing questions, and reading a text to enhance their background knowledge.

*Writing quizzes.* Writing quizzes were an integral part of the intervention program, comprising four argumentative topics of increasing difficulty. These topics were developed by the participants during the intervention period and served as their quizzes. The selected argumentative writing topics were closely aligned with the course objectives, focusing on evaluating the students' ability to comprehend arguments and subsequently write argumentative essays in their second language (L2). To assess the students' performance, each written essay was evaluated using a writing rubric specifically designed for this purpose. The rubric provided a standardized scoring system to objectively evaluate and grade the essays, ensuring consistency and fairness in the assessment process. The utilization of the writing rubric allowed for a comprehensive evaluation of the participants' argumentative writing skills, considering various aspects of content, coherence, language usage, and overall effectiveness in conveying their ideas.

*Post-writing test.* Following the intervention program, a post-writing test was conducted. During this test, participants were allotted 60 minutes to complete an essay

with a minimum of 250 words. The writing topic for the post-writing test was chosen from the pool of topics that typically appear in the IELTS writing task 2. However, special attention was given to align the topic with the themes covered in their “Approaches to Writing” subject. To ensure the appropriateness of the writing topic, three English experts who were also lecturers at the study-university reviewed it.

*Questionnaire on Students’ Perceptions on using TLAN.* This questionnaire was employed to assess the participants’ views regarding the integration of TLAN in their argumentative writing processes. The questionnaire utilized a Likert scale, with participants rating statements from 1 (strongly disagree) to 5 (strongly agree). The questionnaire consisted of two parts, focusing on the participants’ perceptions of “TLAN as a practice” and “TLAN for L2 learning.” The perception questionnaire was adapted from Moody et al. (2019) but was slightly modified by the researchers to suit the context of the current study. To ensure its appropriateness and reliability, the questionnaire was reviewed and approved by three English experts who were also lecturers at the study-university. Additionally, a pilot test involving 29 second year EFL college students was conducted to identify any potential issues with the questionnaire items.

*Interviews.* Interviews were conducted with the participants one week after the implementation of intervention to further gain deeper insights into the participants’ experiences and practices concerning the use of AM with TLAN in their argumentative writing tasks. All voluntary participants were informed about the study prior to the conduct of the interview. Participants’ confidentiality were strictly adhered to throughout the interview process.

### **Intervention**

The intervention in the study consisted of a series of 13 sessions, each lasting approximately 180 minutes. The treatment began by introducing the participants to the concept of “argumentative” writing as a specific writing genre. Key concepts of AM, such as conclusion, premises, evidence, and counter-arguments, were demystified in relation to the development of writing content. Participants learned about the importance of using logical connections between premises and argument conclusion, as well as between different premises, and the significance of signposting in their writing.

The significance of TLAN during paired/group work activities was emphasized. Pre-writing activities, including advance organization, prediction, and schema building, were provided. Participants were allowed to translanguage during brainstorming sessions for their writing tasks. During the writing stage, participants were tasked with creating their argument maps. They shared their maps with peers to shape and refine their ideas before commencing the actual writing process. Feedback and guidance were provided by the teacher, and participants were allowed to translanguage to express their ideas more effectively.

After completing their essays, students had opportunities for self-evaluation and self-reflection on their writing performance. Peer critiquing sessions allowed them to assess

the development of their writing content, including the use of conclusions, premises, evidence, and counter-arguments. They also evaluated each other's use of signposts and logical connections to gauge the development of writing coherence. TLAN was encouraged during these discussions to enhance meaningful expression of ideas. Additionally, revising and editing checklists were given to students to guide them in revising and editing their written work. However, the use of these checklists was optional.

The last eight sessions comprised four rounds of argumentative writing tasks using different topics. The intervention further exposed participants to the use of AM in facilitating their argumentative writing tasks. They were allowed to translanguage during collaboration before proceeding with individual writing.

### **Test Marking**

The evaluation process for students' pre- and post-argumentative writing tests and their argumentative writing quizzes utilized a specific marking rubric. The rubric encompassed two main aspects: development of writing content and development of writing coherence. Under the category of development of writing content, the following factors were assessed and marked: "conclusion," "premises," "evidence," and "counter-arguments." For "conclusion," one mark was given if the student correctly stated the conclusion of the argument, and no marks were awarded if the conclusion was incorrect or missing. The "premises" were evaluated by assigning marks based on how many premises the student provided, relevant to the given topic. "counter-arguments" received marks based on the number of counter-arguments included by the student. The "evidence" received a mark indicating how many premises were supported by appropriate evidence.

In the development of writing coherence, three factors were assessed: "logical connections 1," "logical connections 2," and "signposts". "logical connections 1" received marks based on the number of connections between premises and the conclusion that the student included. "Logical connections 2" were assessed in a similar way, considering the connections between different premises. For "signposts," marks were assigned depending on their proper and correct usage: no mark for no signpost used, 1 mark for weakly used signposts, and 2 marks for strongly used signposts. The scoring method for the rubric was adapted from Harrell & Wetzel (2013) and later modified by the researchers to suit the context of the current study. The rubric was also reviewed and approved by English experts to ensure its cultural and cognitive appropriateness.

### **Data Analysis**

Descriptive statistics were calculated and presented in tabular form to provide an overview of the data. Inferential statistics, such as t-test, were employed to determine whether there was a significant difference in the participants' argumentative writing performance before and after the intervention was provided. Additionally, ANOVA was utilized to examine the significant differences between the quiz results. For the

qualitative data obtained from the semi-structured interviews, thematic analysis was applied. The researchers independently coded the data using topical coding to assign labels to the text. These codes were then interpreted and modified to identify emerging themes (Creswell & Plano-Clark, 2011).

## FINDINGS

### Quantitative Analysis

#### *Participants' pre- and post- argumentative writing performance*

The table presents the test of difference between the participants' pre- and post-argumentative writing test results, focusing on the development of writing content in four sub-components: conclusion, premises, evidence, and counter-arguments. Notably, the "evidence" sub-component showed the most significant improvement in participants' argumentative writing. On the other hand, the "counter-arguments" sub-component exhibited the least improvement, with a mean score of  $\bar{x}=1.06$  and  $SD=0.53$  in the pre-test, which increased to  $\bar{x}=1.90$  with  $SD=0.95$  in the post-test. Overall, all four sub-components showed significant differences before and after the intervention, as demonstrated by a p-value of 0.000, which is less than the 0.05 level of significance.

Table 1

Participants' pre- and post- argumentative writing performance in terms of the development of writing content

Development of Writing Content	Pre-Intervention		Post-Intervention		t-computed value	p-value
	Mean	S.D.	Mean	S.D.		
Conclusion	1.81	0.61	2.76	0.83	-10.27	0.000
Premises	1.52	0.59	2.37	0.82	-13.15	0.000
Evidence	1.73	0.57	2.82	0.89	-17.76	0.000
Counter-Arguments	1.06	0.53	1.90	0.96	-10.11	0.000
Overall	6.12	0.98	9.85	1.67	-21.13	0.000

Table 2 presents a comparison of participants' pre- and post-argumentative writing test results, focusing on the development of writing coherence, including sub-components such as "logical connections 1," "logical connections 2," and "signposts". The most notable improvement in participants' argumentative writing was observed in the sub-component "logical connections 1." Before the intervention, it had a mean score of  $\bar{x}=1.75$  with a standard deviation (SD) of 0.53, and after the intervention, the mean score increased to  $\bar{x}=3.89$  with an SD of 0.76. Conversely, the sub-component "logical connections 2" showed the least improvement, with a mean score of  $\bar{x}=1.54$  and  $SD=0.51$  in the pre-test, which increased to  $\bar{x}=2.18$  with  $SD=0.63$  in the post-test. Importantly, all four sub-components exhibited significant differences before and after the intervention, as evidenced by a p-value of 0.000, which is less than the 0.05 level of significance.

Table 2  
Participants' pre- and post- argumentative writing performance in terms of the development of writing coherence

Development of Writing Coherence	Before the Intervention		After the Intervention		<i>t</i> -computed value	<i>p</i> -value
	Mean	S.D.	Mean	S.D.		
Logical Connection 1	1.75	0.53	3.89	0.76	-10.18	0.000
Logical Connection 2	1.54	0.51	2.18	0.63	-10.02	0.000
Signposts	1.89	0.63	2.82	0.48	-9.19	0.000
Overall	5.18	1.04	8.89	1.08	-18.53	0.000

In Table 3, the results from the t-test analysis showed a significant difference in participants' pre- and post-argumentative writing performance concerning the development of writing content and writing coherence. The overall mean scores before the intervention ( $x=11.30$ ;  $SD=1.74$ ) and after the intervention ( $x=18.74$ ;  $SD=2.01$ ) indicated a statistically significant difference, as supported by a *p*-value of 0.000, which is less than the 0.05 level of significance. Therefore, the implementation of AM with TLAN had a noteworthy impact on participants' argumentative writing, specifically in terms of the previously mentioned components.

Table 3  
Overall test of difference on the participants' pre-and post- argumentative writing performance in terms of development of writing content and writing coherence

Key Concepts of Argumentative Writing	Pre-Intervention		Post-Intervention		<i>t</i> -computed value	<i>p</i> -value
	Mean	S.D.	Mean	S.D.		
Development of Writing Content	6.12	1.24	9.85	1.35	-21.71	0.000
Development of Writing Coherence	5.18	1.19	8.89	1.15	-18.13	0.000
Overall	11.30	1.74	18.74	2.01	-18.70	0.000

Table 4 displays the SPSS results for Repeated Measure Analysis of Variance (within subjects). The *p*-value under the Sig. column, assuming sphericity, is less than 0.05, indicating a significant difference among the scores in the four quizzes. The ANOVA value is represented in the F column ( $F=86.722$ ).

Table 4  
Repeated measure ANOVA. Measure: MEASURE 1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Quiz	Sphericity Assumed	175.621	3	58.532	86.722	.000	.850
	Greenhouse-Geisser	175.621	1.986	88.386	86.722	.000	.850
	Huynh-Feldt	175.621	2.281	76.621	86.722	.000	.850
	Lower-bound	175.621	1.003	174.612	86.722	.000	.850
Error (Quiz)	Sphericity Assumed	30.372	41	.673			
	Greenhouse-Geisser	30.372	29.801	1.021			
	Huynh-Feldt	30.372	34.332	.881			
	Lower-bound	30.372	15.001	2.024			

Table 5 presents the pairwise comparison of means for the four quizzes (Quiz 1, Quiz 2, Quiz 3, and Quiz 4). The *p*-values for the comparisons were all found to be 0.000, which is less than the 0.05 level of significance. This indicates that there is a significant

difference between the scores in Quiz 1 and the scores in the other three quizzes. Further analysis of the mean scores in the second table reveals that the mean score in Quiz 1 is lower than the mean scores of the other three quizzes. This means that the participants' scores in Quiz 1 are significantly lower than their scores in the other quizzes. The asterisks next to the mean scores in the second column indicate the significant differences.

Table 5  
Pairwise comparisons of the means of the four quizzes. Measure: MEASURE 1

(I) Quiz	(J) Quiz	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	-1.811*	.306	.000	-2.740	-.883
	3	-3.249*	.306	.000	-4.304	-2.194
	4	-4.436*	.306	.000	-5.611	-3.263
2	1	1.812*	.306	.000	.882	2.744
	3	-1.436*	.223	.000	-2.117	-.761
	4	-2.623*	.179	.000	-3.169	-2.076
3	1	3.248*	.348	.000	2.192	4.303
	2	1.432*	.223	.000	.758	2.112
	4	-1.182*	.245	.001	-1.929	-.441
4	1	4.433*	.387	.000	3.262	5.611
	2	2.621*	.179	.000	2.077	3.173
	3	1.185*	.245	.001	.441	1.934

Based on estimated marginal means

\* = the mean difference is significant at the .05 level

<sup>b</sup> = adjustment for multiple comparisons: Bonferroni.

### ***Participants' Perception on the Use of TLAN***

Table 6 shows the mean, and SD results for participants' perception with regard to TLAN as a practice, and TLAN for learning English. To illustrate: the participants strongly agreed to statement #2 (*TLAN is a normal practice for bilinguals*) yielding the highest mean of 4.49 and SD score of 0.51, however, the participants strongly disagreed on statement #4 (*TLAN is a disrespectful practice*) with  $\bar{x} = 1.16$ ;  $SD = 0.63$ ). For the latter, students responded positively as they, in overall, agreed that translanguaging can be allowed for learning English ( $\bar{x} = 3.41$ ;  $SD = 0.69$ ). They, particularly, strongly agreed to statements 1, 3, and 4 where they believed that TLAN might potentially aid them in learning an L2. The participants, however, disagreed to statements 2 ( $\bar{x} = 2.24$ ) and 5 ( $\bar{x} = 1.71$ ) believing that TLAN is not a sign of low proficiency in English, and accepting that language instructors should not avoid implementing TLAN in the classroom since it will not prevent them from learning an English language.

Table 6  
Mean and standard deviation for students' perception on using TLAN

Statements	Mean	S.D.	Interpretation
<i>TLAN as a Practice</i>			
1. TLAN should be avoided by bilinguals.	1.71	0.76	Strongly Disagree
2. TLAN is a normal practice for bilinguals	4.49	0.51	Strongly Agree
3. TLAN indicates a lack of linguistic proficiency in English.	2.09	0.63	Disagree
4. TLAN is a disrespectful practice.	1.16	0.63	Strongly Disagree
5. TLAN is confusing for me.	1.87	0.45	Disagree
6. It is fine to apply TLAN in writing tasks	4.19	0.67	Agree
<i>TLAN for learning L2</i>			
1. TLAN helped me learn the English language.	4.37	0.63	Strongly Agree
2. TLAN is a sign of low proficiency in English	2.24	0.51	Disagree
3. TLAN is essential for learning both L1 and English language.	4.47	0.71	Strongly Agree
4. TLAN has assisted me in learning English.	4.29	0.53	Strongly Agree
5. Language instructors should avoid TLAN because it will prevent learning an English language.	1.71	0.69	Strongly Disagree

### Qualitative Analysis

#### *Benefits of using AM on participants' argumentative writing task processes*

In this study, one of the main themes that emerged from participants' feedback was the positive impact of AM in facilitating their argumentative writing tasks. The sub-themes identified within this first theme included better visualization of arguments, reduced mental overloading, and a more appropriate use of cohesive devices. When participants were asked about their experiences in using AM in facilitating their argumentative writing tasks, they expressed that AM greatly improved their ability to visualize and structure their arguments effectively. By employing box and line diagrams to represent their "supports," "premises," "objections," and "counter-arguments," students found it much easier to construct coherent and well-organized arguments. P16 conveyed that:

*"AM assisted me in recognizing complex arguments and simplifying them by dividing them into sub-units using boxes and support lines which lead me to clearer conclusions and premises." (P16).*

Traditional written prose often presents complex and open-textured content, which can pose challenges for readers in identifying explicitly stated arguments and differentiating between argument conclusions, supporting points, and objections (Davies, 2011). This lack of clear structure and organization within the text can lead to difficulties in comprehending the main points of the argument and may require additional time and effort during the analysis process. The dense use of language and intricate sentence structures further contribute to the intricacy of the prose (Davies, 2011). By using AM, participants could visually represent the various components of an argument, such as conclusions and premises, using boxes and support lines. This visual representation allowed them to easily discern the logical structure of the argument, enhancing their

understanding and reducing the ambiguity associated with traditional prose. Participant 4 mentioned that:

*“Using AM helped me organize my arguments, resulting in a reduction of mental clutter. This, in turn, led to a clearer comprehension of my arguments as they could distinctly visualize their premises and objections.” (P4)*

Meanwhile, the use of linguistic signposts in writing plays a crucial role in highlighting the connections between different ideas and sentences within a text (Robillos, 2021). These signposts act as guideposts that enable writers to strategically lead readers through their argumentative writings, making the logical flow of ideas more apparent and coherent. In the context of the study, when students were introduced to linguistic signposts and encouraged to apply them during their argument mapping process, it had a notable impact on their writing. By incorporating these signposts, students became more aware of the importance of connecting their evidence to support their premises effectively. The linguistic cues helped them articulate the relationships between different parts of their argument more explicitly, reducing the chances of making mismatches between premises and supporting evidence. As a result, the students' argumentative writing became more cohesive and convincing, with a stronger alignment between the claims they made and the evidence they provided. One participant, in particular, highlighted the positive impact of linguistic signposts on their argument mapping experience. The participant's feedback likely indicated that they felt more confident and skilled in connecting their evidence logically to their premises, resulting in a more polished and persuasive argumentative piece.

*“Being introduced to AM increased my awareness of correctly utilizing cohesive devices in my writing.” (P9)*

#### ***Students' Perception on using AM with TLAN***

The second theme of the study delved into the students' perceptions of using AM with TLAN to enhance their argumentative writing skills. Within this theme, several sub-themes emerged, shedding light on the diverse benefits experienced by the participants. One significant sub-theme was the participants' reported deeper understanding of key concepts and markers in argumentative writing. The intervention exposed them to AM alongside the freedom to translanguague during the entire writing process, encompassing planning, drafting, and evaluating. This approach proved instrumental in cultivating a more profound grasp of the fundamental concepts and markers essential to effective argumentative writing. By visually mapping their ideas through AM, students found it easier to internalize the meanings and proper application of these terms. The visual representation of arguments through AM enabled them to see these key concepts clearly, leading to a more meaningful understanding and usage of such terms in their written outputs.

Moreover, the combination of AM with TLAN resulted in a more meaningful understanding of the students' L1. TLAN allowed participants to harness the full potential of their linguistic resources, empowering them to express their ideas more

eloquently and comprehensively in their L1. In this context, P12's feedback likely reinforces the importance of these sub-themes. It likely highlights the value of visualizing key concepts through AM and the benefits of translanguaging practices in promoting a deeper understanding and effective application of these concepts in the students' written work. Participant 12 conveyed:

*"When we engaged in the sharing activity and discussed how to incorporate those signposts using our first language (L1), it provided me/us with a more profound comprehension of their proper usage in my writing." (P12)*

In addition, the participants in the study fully embraced the use of TLAN and found it to be an effective learning strategy. They perceived that TLAN facilitated a deeper and more meaningful understanding of the concepts being discussed. By engaging with their first language (L1) while learning, they became more critically aware of the linguistic forms and structures within their L1, enabling them to better comprehend and relate to new concepts in relation to their existing knowledge. Incorporating TLAN in the learning process proved to be a powerful tool in unlocking new social realms for the participants. By tapping into their diverse linguistic repertoires, they had ample opportunities to explore and discover different aspects of their L1. The use of TLAN, therefore, acted as a bridge that facilitated the exploration of different dimensions of their language and culture. P3's narration likely echoes the positive impact of TLAN in their learning experience.

*"Through TLAN, I was able to uncover numerous new words and vocabulary in my first language that I hadn't encountered or used previously." (P3)*

*"When given the opportunity to discuss my ideas in my first language (L1), it significantly improved the fluidity and speed of my communication, allowing me to express my thoughts more naturally and effortlessly." (P6)*

Furthermore, the act of collaboration during the writing process has been recognized as a valuable contributor to learning, as evidenced by studies conducted by Krajka (2012) and Trimbur (2009). Felton et al. (2009) also observed that engaging in deliberation before writing significantly enhanced the effectiveness of the writing process compared to individual writing. In the present study, the students were exposed to collaborative activities before being tasked with mapping their arguments, and they were subsequently asked to monitor and evaluate their writing performance. The introduction of collaboration activities played a pivotal role in encouraging students to work together with their peers. As expressed by one participant:

*"I find myself more engaged and willing to share my perspectives when I have the freedom to use my first language (L1). This has a positive impact on my understanding of the argument, as it allows me to delve deeper into the subject matter." (P1)*

### ***Enhanced Critical Thinking Skills***

The third theme of the study focused on the participants' experiences using AM with TLAN to enhance their argumentative writing skills. Within this theme, two key sub-themes emerged: participants becoming more logical in organizing facts and exhibiting

a greater sense of self-evaluation. The incorporation of AM with TLAN proved to be a valuable strategy in improving their argumentative writing abilities.

Of particular note was the profound impact of AM on enhancing participants' critical thinking skills. Through the visual mapping process, they learned to approach their arguments more systematically, leading to a heightened ability to organize facts in a logical manner. The visual representation of their arguments through AM enabled them to construct clearer and more comprehensive arguments, as they could easily identify the relationships between different elements and the overall structure of their writing.

Furthermore, participants' self-evaluative tendencies were strengthened as a result of using AM with TLAN. The engagement with their own arguments and the utilization of TLAN in the writing process encouraged reflective thinking. This introspection allowed them to critically assess their work, identifying areas for improvement and refining their writing to make it more coherent and persuasive. P11's feedback likely resonates with the benefits of AM and TLAN in developing logical argumentation. The participant's experience likely demonstrates the positive impact of visualizing arguments through AM, leading to improved organization of facts and the construction of more compelling arguments. Participant 11 expressed:

*"I make sure to express my thesis in a precise and coherent manner, ensuring that my contentions and conclusions are clear and free from inconsistencies and errors. This practice has helped me enhance the logical and critical aspects of my arguments." (P11)*

The development of critical thinking skills among students is crucial for their growth as effective writers and thinkers. One of these essential skills involves becoming more self-evaluative of their writing performance and being open-minded when considering different viewpoints. When students engage in self-evaluation, they assess the strengths and weaknesses of their arguments, enabling them to identify areas for improvement and take necessary steps to enhance their writing abilities. This self-assessment instils a sense of determination and motivation to persist in their writing efforts, pushing them to continuously strive for better performance. In the case of P9, their experience exemplifies the positive impact of self-evaluation on critical thinking. By critically examining their own arguments and acknowledging areas that need refinement, Participant 9 is cultivating a habit of reflective thinking. This introspective process fosters a deeper understanding of their writing, making them more conscious of their reasoning and approach to presenting ideas. As a result, they become more capable of producing well-structured and persuasive arguments.

Moreover, being open-minded to the views and perspectives of peers during discussions is another crucial aspect of critical thinking. When students are receptive to different opinions, they demonstrate a willingness to consider alternative viewpoints and engage in constructive dialogue. P1's receptiveness to her peers' views illustrates the value of open-mindedness in collaborative writing activities.

*“Mapping my arguments enable to ensure the correctness of my premises and counter-arguments. If I found any shortcomings, I would use that knowledge to improve and refine my arguments in future endeavors.” (P9)*

*“I find it essential to listen to my peers' opinions as they offer valuable insights that can help enhance my paper by providing additional ideas and perspectives.” (P1)*

## DISCUSSION

The findings of the current study revealed that the implementation of AM with TLAN led to significant improvements in the argumentative writing skills of the EFL students, particularly in terms of the development of writing content and writing coherence. These positive outcomes can be attributed to two main factors. Firstly, the advantageous features of AM played a vital role in enhancing the learners' logical reasoning and problem-solving abilities, which are crucial factors contributing to effective argumentative writing tasks. Secondly, the valuable support offered by TLAN, or the utilization of their diverse linguistic repertoires during sharing and collaboration activities, further bolstered their writing performance.

Notably, the use of AM in facilitating understanding has been well-documented in the literature (van Gelder, 2007; Davies et al., 2021; Robillos & Thongpai, 2022; Robillos & Phantharakphong, 2020). By visually mapping their thoughts, learners gain a comprehensive grasp of their ideas, enabling them to identify and address areas that require addition, deletion, or reformation (Davies, 2014; Harrell & Wetzel, 2013; Robillos, 2021). In the present study, participants maximized the use of AM, which significantly improved their argumentative writing performance, evident in their written outputs' enhanced content development and writing coherence. Notably, participants were able to provide more well-developed premises, co-premises, and evidence to support their positions. They also elaborated on their counter-arguments, reinforcing their conclusions while skilfully avoiding mismatches between evidence and premises. Furthermore, their writing coherence showed marked improvement, with a demonstrated ability to properly connect premises with conclusions and establish connections between premises. Moreover, they appropriately incorporated signposts to enhance the flow and structure of their writing. These findings align with previous studies conducted by Harrell & Wetzel (2013), which asserted that constructing visual representations of argument structure enhances the acquisition and development of argumentative writing skills.

Significantly, the participants in the study exhibited a noteworthy upward trend in their writing quiz scores. Although they initially began at a lower proficiency level, their scores gradually improved after being exposed to the intervention, indicating the positive influence of the intervention on their learning and understanding of the writing processes. Moreover, a specific sub-component of their writing, namely “evidence” showed remarkable improvement in the development of writing content. Participants demonstrated progress in effectively incorporating evidence in their writing by establishing cause and effect relationships, making comparisons between different

elements, and confirming or refuting claims and logical assertions. This progress in argumentative content also corresponded to an enhancement in their use of vocabulary or lexical resources, suggesting that as their argumentative writing skills improved, so did their linguistic capabilities.

However, it is worth noting that the present study's findings diverged from those of Malmir & Khosravi's (2018) research. While Malmir & Khosravi observed a significant improvement in EFL learners' expository and descriptive writing performances after AM instruction, there was no noticeable improvement in the students' vocabularies. One possible explanation for this discrepancy could be attributed to the different writing genres employed in the two studies. In the present study, the focus was exclusively on the argumentative type of writing, which demands specific lexical and syntactical grammar utilization (Malmir & Khosravi, 2018; Robillos & Phantharakphong, 2020). Conversely, Malmir & Khosravi's study involved expository and descriptive writing genres, which may have presented distinct linguistic demands, potentially leading to some confusion among the learners in utilizing appropriate vocabularies for each genre.

However, it is important to note that while previous researchers conducted their studies by solely implementing TLAN to facilitate students' argumentative writing tasks, the present study introduced an additional component in the form of AM). AM served as a potent tool to support students in processing their argumentative writing tasks (Robillos & Thongpai, 2022), in addition to the benefits derived from translanguaging use. The combined approach of AM with TLAN proved to be particularly effective in enhancing the participants' argumentative writing abilities, as both strategies complemented each other, amplifying the positive effects on their writing performance.

The participants in the present study held a positive perception of TLAN as a non-disrespectful practice, particularly as EFL learners and would-be teachers of English. They viewed TLAN as a strategic and supportive tool to effectively comprehend complex concepts related to specific topics. Moreover, they did not feel confused or hindered in using English when TLAN was integrated with AM to facilitate their writing process. This aligns with the understanding that learners, even those proficient in L2, often engage their L1 in cognitive processes during L2 learning (Rivera & Mazak, 2017). It is a common phenomenon for bilinguals to utilize their L1 when activating background knowledge, monitoring, and evaluating their writing performance, which applies equally to argumentative writing.

When students were encouraged to translanguaging, they actively participated and felt a sense of meaningful learning. They became more critically aware of the nuances of their L1 and attempted to relate new concepts to their existing knowledge. This highlights the value of TLAN pedagogy in not only breaking down linguistic barriers to promote bilingualism but also allowing learners to explore different social realms of their L1, leading to a deeper understanding and appreciation of their linguistic repertoire. Furthermore, the improved argumentative writing performance of the students, facilitated by the helpful features of AM, further reinforced their positive perception towards the pedagogical use of TLAN. AM enhanced the students' logical thinking and

ability to present well-supported arguments with balanced evidence. This process made them more self-evaluative and open-minded towards their writing, prompting them to critically assess and refine their work. Finally, the students' ability to convey their ideas and thoughts with ease and fluidity, thanks to the encouragement of translanguage, resulted in increased engagement with the topic. This enhanced engagement led to a deeper level of understanding and more meaningful learning experiences.

### **CONCLUSION**

The findings from the present study have illuminated the effectiveness of integrating AM with TLAN in enhancing Thai EFL learners' argumentative writing skills as well as in the EFL teaching and learning contexts. This integrated approach not only enhances argumentative writing skills but also fosters the development of critical thinking and language proficiency. It encourages instructors to embrace learners' linguistic repertoires and utilize them as valuable resources for language learning. By striking a balance between translanguage use and L2 production, teachers can optimize the benefits of TLAN while ensuring a comprehensive language learning experience for their students. As a result, learners will recognize the value of TLAN as a strategic pedagogical tool and utilize it effectively to deepen their understanding of concepts and improve their language skills. The study's findings contribute to the growing body of research on effective language teaching practices and underscore the importance of creating dynamic and inclusive learning environments that cater to the diverse needs and strengths of language learners.

### **LIMITATION**

Despite yielding interesting findings, the present study is not without limitations that warrant consideration. The small sample size of 27 participants might have limited the statistical power of the analysis and generalizability of the results. Therefore, to strengthen the study's findings and enhance its external validity, future research should replicate the study on a larger and more diverse sample. Moreover, while the integration of AM with TLAN proved to be effective in improving argumentative writing skills, the study focused solely on this specific combination. Future studies could explore the potential benefits of AM and TLAN in conjunction with other innovative pedagogical approaches, such as Task-Based Language Teaching (TBLT) or Content and Language Integrated Learning (CLIL). Investigating the synergistic effects of these different pedagogies on various macro-skills in the English as a Foreign Language (EFL) context would provide valuable insights into the broader applications of AM and TLAN in language education.

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