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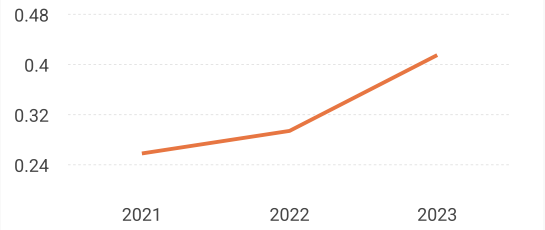

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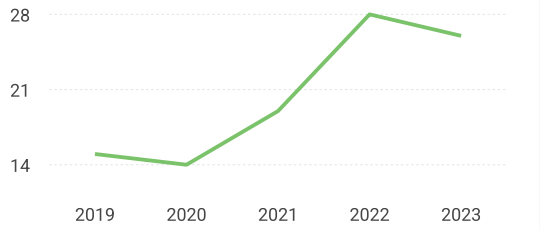

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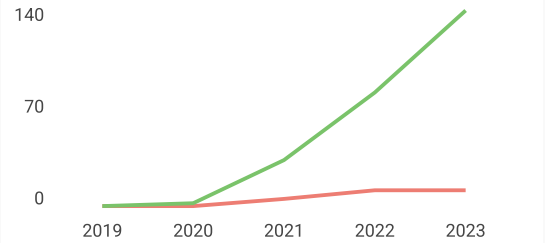

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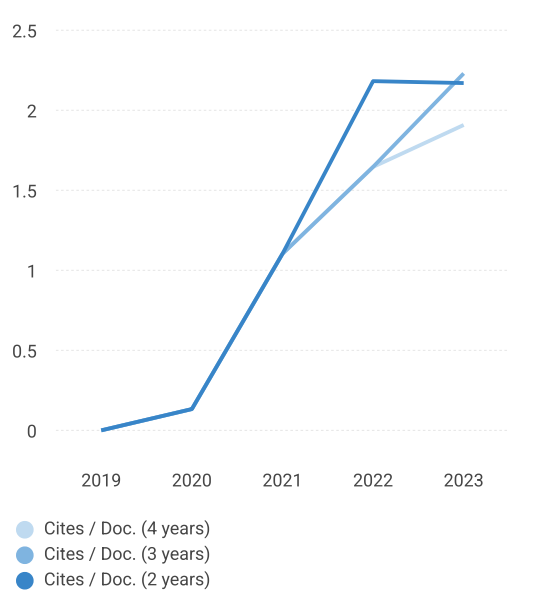

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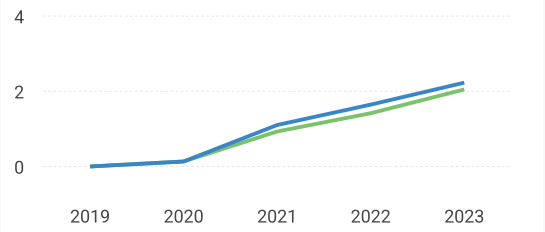

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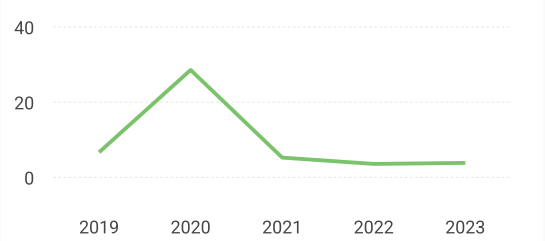

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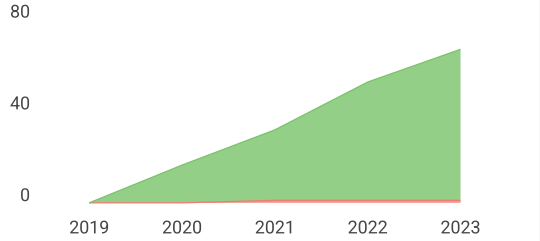

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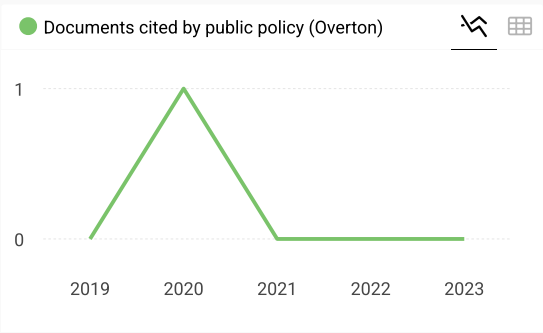

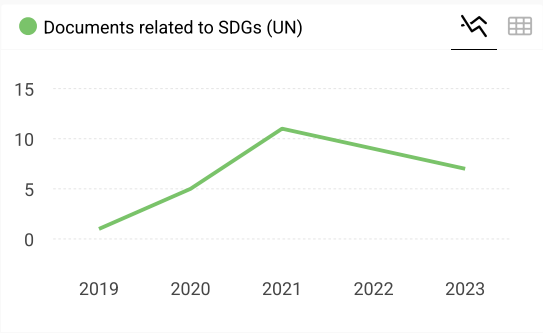

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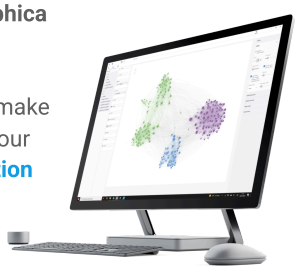

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The effects of concept mapping in enhancing grade 10 students' learning achievement of literary analysis skills

Kullanut Phoosomphong, Autthapon Intasena, Thussaneewan Srimunta, Nattapon Yotha

Research Article

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Abstract

Background/purpose. The purposes of this study were 1) to examine the effectiveness of concept mapping on Grade 10 students' literary analysis skills, 2) to study the participants' satisfaction with concept mapping in learning literary analysis skills, and 3) to establish the construct validity of the learning management plan through confirmatory factor analysis (CFA).

Materials/methods. The study utilized an experimental design with a single group. A sample of 41 Grade 10 students from a public school in northeastern Thailand was selected through cluster random sampling. The primary intervention, a learning management plan incorporating concept mapping, consisted of four lesson plans focused on key components of literary analysis. Instruments included a literary analysis test, with 30 validated multiple-choice items, and a satisfaction questionnaire with 10 items, demonstrating acceptable reliability. Data analysis involved the E1/E2 formula for effectiveness, a paired samples t-test to compare pre-test and post-test scores, descriptive statistics for satisfaction levels, and CFA to assess the construct validity of the intervention

Results. Results showed significant improvement in students' literary analysis skills, with post-test scores markedly higher than pre-test scores. Satisfaction levels were also very high, indicating a positive reception of concept mapping as a learning tool

Conclusion. This study contributes to the field by extending previous research, which primarily focused on reading comprehension, to demonstrate concept mapping's potential in developing higher-order literary analysis skills and validating its construct through CFA.

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1. Introduction

Throughout the development of reading skills, language learners progress from mastering simple skills to more complex ones. As learners advance to higher-level reading classes, the texts they encounter become increasingly complex. Literary reading—where students are expected to apply both critical thinking and language skills—represents one of the most challenging aspects of reading development, aligning with the higher levels of Bloom's taxonomy (Carter & Nash, 1983; Miall & Kuiken, 1999). At this stage, students are required to analyze characters, plots, and settings, as well as to interpret the underlying messages and themes intended by the authors (Bruns, 2011; Miall, 2006). Teaching these skills requires careful planning and execution of class activities to ensure students achieve these advanced analytical abilities (Knights, 2017; Liu, 2017).

To elaborate, Bloom's taxonomy provides a framework for understanding the complexity of learning, especially at higher cognitive levels such as analysis and evaluation (Anderson et al., 2000). In developing literary analysis skill, students are expected not to just comprehend basic meaning of the text. In fact, they need to use more advanced skills, including synthesizing information and evaluating the meaning of texts when reading literature (Bruns, 2011). This demand puts challenges on students as they might struggle with these tasks and find it difficult to analyze intricate plot structures, character motivations, and deeper thematic elements.

In Thailand, literary analysis skills have been identified as a significant challenge for students. According to Lachum & Intasena (2024), linguistic, cognitive, and schematic factors are the obstacles preventing students from mastering the skills of literary analysis. Language barriers hinder their ability to fully comprehend complex texts, particularly those written in advanced or unfamiliar vocabulary. In addition, thinking skills, such as analytical skills, could be linked to the problem (Hafidz et al., 2022). As the students need analytical skills to identify literary elements and interpret their hidden messages and implications within the context of the story, it is complicated for certain students to use them in mastering and analyzing such complex texts as literature. Lastly, limited world knowledge further draws the students back to develop the ability to analyze literature (Chambers, 2018). This could include the cultural and historical contexts of literary works—the component that might be difficult for some students to grasp the themes and messages that the authors intend to convey. These factors combined contribute to students' ongoing difficulty in mastering literary analysis.

Concept mapping - a visual learning technique that allows students to organize ideas, identify relationships, and create connections between various text elements could be applied (Kane & Trochim, 2007; Trochim, 1989; Trochim & McLinden, 2017). This method encourages students to break down complex information into smaller, more understandable components by creating diagrams that link concepts such as characters, themes, plot points, and other literary elements (Trochim & McLinden, 2017). Scholars (Hazaymeh & Alomery, 2022; Kim et al., 2021; Lumontad et al., 2020; Nair & Said, 2020; O'Day & Karpicke, 2021; Oliver, 2009; Ta & Razali, 2023; Tajeddin & Tabatabaei, 2016) have successfully employed concept mapping in classes focused on analytical thinking, particularly in the context of language learning. These studies have shown that it significantly improves students' ability to critically engage with texts, enhancing both their understanding and analytical skills.

However, gaps remain in applying concept mapping to more complex reading tasks. While concept mapping has been widely used to support lower-level thinking skills, such as comprehension and application, there is an urgent need to explore its potential for higher-order thinking skills. Specifically, its effectiveness in facilitating analysis and evaluation of the upper tiers of Bloom's taxonomy remains underexplored. As reading tasks become more complex and require students to interpret deeper meanings, such as analyzing characters' motivations or evaluating the implications

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of themes, the question arises: how effective is concept mapping at these advanced cognitive levels? Addressing this gap could open new avenues for using concept mapping as a powerful tool in developing students' literary analysis skills. Therefore, it may be argued that there is a need for further research in the area of literary analysis as it relates to idea mapping as a tool for language training.

2. Literature Review

2.1. Literary analysis skill

Literary analysis could be considered as the process of examining and interpreting the elements of a text to uncover deeper meanings and insights (Esplugas & Landwehr, 1996; Kusch, 2016; Miall, 2006) . According to Kusch (2016), the skill encompasses analyzing a wide range of literary forms and genres and applying methodologies relevant to twenty-first-century literary studies. This involves identifying and interpreting components such as themes, characters, plot, setting, symbols, and language used by the author. Therefore, students encounter essential questions that shape their understanding, such as What qualifies as literature? How do social factors (gender, race, class, culture etc.) influence the meaning of a text? Why do they need to consider the social and historical context of a text? Additionally, the analytical approach varies across media, as students learn to adapt their skills when examining texts such as poems or digital media. In addition, the benefits of literary analysis skill rely on how it encourages students to think critically, question the text, and explore diverse perspective. This also leads to deeper cultural understanding of the literature context. Stobaugh (2013) asserts that these abilities not only improve students' understanding but are also cross-disciplinary, giving them the capacity to think critically and effectively express their interpretations in a range of academic settings.

To use literary analysis effectively, learners should be guided by a set of core skills that enable them to engage with and interpret texts meaningfully. Scholars (Kusch, 2016; Miall, 2006; Stobaugh, 2013) have presented core skills that should be taken into consideration in the process of literary analysis. Specifically, learners should be able to use close reading skill. This requires students to critically examine the text by focusing on word choice, sentence structure, and literary techniques used by the author. It helps uncover layers of meaning that contribute to the text's overall impact. Moreover, characters, plot, themes, tone, and imagery as key elements of the text should be identified in the analyzing processes. Likewise, students must explore the author's use of literary devices. As symbolism, foreshadowing, and metaphor are commonly used in literature, understanding them allow learners to reach the depth and complexity of the narrative. In addition, socio-cultural and historical context of the work influence the text's themes and messages. Learners are expected to understand these elements to gain insightful comprehension of the text. Students are also encouraged to consider the author's purpose, reflecting on the message the author aimed to convey and the significance of their choices. Students should be able to provide a text evaluation by forming their own.

Consequently, developing literary analysis skills could be challenging in a language classroom. Apart from facing language barriers, especially when analyzing literature with advanced or archaic language, learners might find that they need advanced analytical skills such as the ability to identify implicit meanings and symbolic elements within the text. Furthermore, a lack of sufficient background knowledge on historical and cultural contexts often prevents students from fully grasping the depth of certain literary works. According to Lachum & Intasena (2024), these challenges can lead to frustration and disengagement, as students may feel overwhelmed by the complexity of the task. Consequently, educators are tasked with finding innovative approaches, such as concept mapping and collaborative learning, to support students in overcoming these obstacles.

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2.2. Concept Mapping in Literary Analysis Development

Concept mapping is defined as a visual learning tool that expects its users to organize and structure information by representing ideas and their relationships in a diagrammatic form (Trochim, 1989; Trochim & McLinden, 2017). In language learning, concept mapping helps learners break down complex information, identify connections between concepts, and build a deeper understanding of the material (Hazaymeh & Alomery, 2022). Specifically, mapping out ideas provide students chances to practice actively engaging with the text. As they organize key elements like themes, characters, and settings, it enhances their comprehension and retention (Bagci Kilic, 2003). This structured approach to learning encourages critical thinking and enables students to move beyond surface-level reading, helping the learners gain a more analytical and thoughtful engagement with language.

Therefore, it could be noted that concept mapping could be considered an effective tool in developing literary analysis skills. Students can see the connections between characters, story points, themes, and other literary components by using it to depict and connect different parts of a literary work. Students can be asked to classify related literary techniques, such as metaphors, motifs, and symbols, and determine how these components affect the tone and meaning of the text. Additionally, concept mapping facilitates the grouping of social and historical contexts, helping students understand the background that informs the narrative. This organized, visual representation allows learners to systematically evaluate a text by breaking down complex information into manageable components, which ultimately supports a more structured and coherent analysis. Through concept mapping, students can systematically approach evaluation, making it easier to assess a text's effectiveness and to communicate their insights with clarity and depth.

2.3. Previous studies

Scholars (e.g., Hazaymeh & Alomery, 2022; Kim et al., 2021; Lumontad et al., 2020; Nair & Said, 2020; O'Day & Karpicke, 2021; Oliver, 2009; Ta & Razali, 2023; Tajeddin & Tabatabaei, 2016) have extensively studied the effects of concept mapping in the language classroom, particularly focusing on its impact on reading comprehension and related cognitive skills. For example, Hazaymeh and Alomery (2022) explored visual mind mapping strategies' effectiveness in improving English language learners' critical thinking skills and reading ability. They found that visual mind mapping significantly enhanced students' critical thinking, allowing them to analyze text more effectively. Similarly, Kim et al. (2021) examined a content literacy intervention designed for first graders and noted that integrating concept mapping with literacy activities improved students' reading comprehension, domain knowledge in science, and engagement with the material.

In another study, Lumontad, Argate, and Aparece (2020) focused on concept mapping as a reading comprehension tool and reported that it enabled students to break down and organize information within texts, making comprehension more accessible and manageable. Nair and Said (2020) investigated the effect of graphic organizers, specifically KWL charts, on young learners' reading comprehension in an ESL setting. They found that such visual tools supported learners in structuring and retaining information, thus boosting comprehension. Furthermore, O'Day and Karpicke (2021) conducted a comparative study on retrieval practice and concept mapping, concluding that combining these strategies could yield significant improvements in students' comprehension and retention of complex information.

It can be noted that previous studies indicate the positive impacts of concept mapping on reading comprehension by supporting students in organizing and retaining information, particularly in language and literacy contexts. However, the focus of existing research has primarily been on comprehension at a surface level rather than on more advanced analytical skills. While concept mapping has shown effectiveness in supporting basic comprehension, its potential to enhance literary analysis skills, which require students to interpret, evaluate, and draw connections beyond

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basic understanding, remains underexplored. Moreover, no prior studies have investigated the construct validity of interventions using concept mapping, leaving a significant gap in understanding whether the design and structure of such interventions align with their intended purposes.

Therefore, the current study aims to address these gaps by examining the effects of concept mapping on Grade 10 students' ability to perform literary analysis. Specifically, it explores how this technique can enhance students' critical thinking and overall learning achievement in reading literature. The principles of concept mapping were utilized as part of a learning management plan designed to instruct the skills of literary analysis. Additionally, this study incorporates confirmatory factor analysis (CFA) to evaluate the construct validity of the intervention, providing a rigorous assessment of its effectiveness and alignment with its intended goals. The purposes of the study were 1) to examine the effectiveness of concept mapping on Grade 10 students' literary analysis skills, 2) to study the participants' satisfaction with concept mapping in learning literary analysis skills, and 3) to establish the construct validity of the learning management plan through CFA.

3. Methodology

3.1. Research Design

The study employed an experimental design with a single group. The treatment consisted of a learning management plan that incorporated concept mapping as the primary learning exercise for every class. The participants' literary analysis abilities were evaluated before, during, and after the treatment. Additionally, participants' satisfaction with their learning experiences using concept mapping in literary analysis classes was assessed.

The learning management plan was developed with both content validity and construct validity. Content validity was ensured through expert evaluation, where three professional educators reviewed and refined the plan. Construct validity was assessed using Confirmatory Factor Analysis (CFA), which verified whether the structure of the learning management plan aligned with its intended objectives. This dual approach ensured that the intervention was both theoretically sound and effective in practice.

3.2. Samples

The sample consisted of 41 Grade 10 students from a public school in Thailand, selected from a population of 166 through cluster random sampling, using class group as the selection criterion. The school was located in a significant town in northeastern Thailand. The participants had completed the standard national curriculum applied to all students across the country, and their language proficiency levels were at A1–A2 according to the CEFR. Ethical considerations in human research were followed in the treatment of all participants.

3.3. Instruments

3.3.1. Learning management plan

The primary intervention was structured as a learning management plan, encompassing lesson plans that addressed each component of literary analysis skills. The content covered included analytical thinking skills, the ability to connect concepts, understanding the value of literature, and literary analysis skills. This plan comprised four lesson plans, each requiring two class hours. Within each plan, students received instruction, engaged in activities, and were assessed on their skills.

In terms of activities, students were tasked with conducting analyses of literary works. They submitted concept maps that represented their analysis, along with their evaluations. Students were required to group literary devices, such as metaphors and similes, and to organize historical background information of the work, linking these elements to form a cohesive understanding. They concluded each activity by providing a reflective evaluation of the work.

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Three experts and professional teachers reviewed the plan, and the evaluation indicated a high level of quality and feasibility ($\bar{x}$ = 4.85).

3.3.2. Literary Analysis Test

The literary analysis test was designed as a multiple-choice test with four answer options per question. Initially, 45 items were developed, which were then tested on a sample group with similar characteristics to the main study participants. This preliminary testing aimed to assess each item's difficulty level, discrimination index, and reliability. Based on the results, 30 items met the quality criteria and were selected for the final test version. The test content covered analytical thinking skills, ability to connect concepts, understanding the value of literature, literary analysis skills. The 30 selected items were further analyzed to determine the overall reliability of the test using Lovett's formula, which indicated a reliability coefficient of 0.69 for the complete test. The Index of Item-Objective Congruence (IOC) for the selected items ranged from 0.5 to 1.0. The difficulty levels of these items ranged from 0.25 to 0.80, with discrimination indices between 0.40 and 0.95.

3.3.3. Questionnaire

A questionnaire was designed to assess students' satisfaction with the learning management approach. It consisted of 10 items, selected from an initial pool of 15 preliminarily created items. The Index of Item-Objective Congruence (IOC) for these items ranged from 0.5 to 1.0. The discrimination index for each item was analyzed using the Item-Total Correlation method, resulting in item discrimination values (r_xy) between 0.52 and 0.83. To determine the overall reliability of the satisfaction questionnaire, Cronbach's alpha coefficient was calculated, yielding a reliability score of 0.81 for the whole questionnaire.

3.4. Data collection and data analysis

Data were collected from a public school within the Thai educational context. Four key data points—pretest scores, lesson plan scores, posttest scores, and questionnaire results—were analyzed. The lesson plan and posttest scores were used to evaluate the effectiveness of the learning management approach through the E1/E2 formula, with an 80/80 criterion serving as the benchmark. Pretest and posttest scores were compared using a paired samples t-test. Questionnaire results were analyzed using mean scores and standard deviations with the following interpretation criteria: 1.0–1.50 (very low), 1.51–2.50 (low), 2.51–3.50 (average), 3.51–4.50 (high), and 4.51–5.00 (very high).

4. Results

Table 1. The effectiveness of concept mapping learning management plan

Effectiveness	Full mark	$\bar{x}$	S.D.	%
Process Effectiveness (E1)	110	89.16	2.79	81.06
Product Effectiveness (E2)	30	25.47	1.76	84.88
Effectiveness (E1/E2) = 81.06 / 84.88				

Table 1 presents the effectiveness of the concept mapping learning management plan, evaluated through both process effectiveness (E1) – participants' scores during learning and product effectiveness (E2) – participants' post-test score. The full mark for process effectiveness (E1) was set at 110, with students achieving a mean score of 89.16 (S.D. = 2.79), resulting in an effectiveness percentage of 81.06%. For product effectiveness (E2), the entire mark was 30, with students achieving a mean score of 25.47 (S.D. = 1.76), resulting in an effectiveness percentage of 84.88%. Therefore, the overall effectiveness of the learning management plan calculated was 81.06/84.88

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(E1/E2 = 81.06/84.88), reaching the predetermined criteria of 80/80. This demonstrates that the plan meets or exceeds the targeted outcome.

Table 2. Participants' literary analysis skills before and after the treatment

Literary analysis skills	N	$\bar{x}$	S.D.	t-test
Pre-test	43	11.51	2.21	31.52*
Post-test	43	25.47	1.74	

*p<0.05

Table 2 shows the comparison of participants' literary analysis skills before and after the treatment. The results indicate that the participants' average score on post-test ($\bar{x}$ = 25.47, S.D = 1.74) was increased from the pre-test ($\bar{x}$ = 11.51, S.D. = 2.21). Moreover, a paired samples t-test revealed a statistically significant improvement in literary analysis skills following the treatment, with a t-value of 31.52 ($p < 0.05$). This indicates that the treatment had a positive and significant effect on enhancing participants' literary analysis skills.

Table 3. Construct validity of the learning management plan

behavioral indicators	Factor loading		S.E.	Z	p-value	R-squared	Factor Score Coefficient
	b	β					
First-Order Confirmatory Factor Analysis							
1. Analytical Thinking Skills							
1.1 Differentiation	1.00	0.46	0.03	16.70	0.000	0.21	0.16
1.2 Comparison	1.99	0.72	0.02	38.25	0.000	0.51	0.38
1.3 Categorization	1.05	0.80	0.01	64.10	0.000	0.64	0.44
1.4 Interpretation	1.41	0.78	0.02	53.91	0.000	0.61	0.70
1.5 Evaluation	1.46	0.81	0.01	70.50	0.000	0.66	0.84
1.6 Hypothesis Formulation	1.33	0.66	0.02	32.90	0.000	0.44	0.34
1.7 Summarization	1.21	0.78	0.02	53.65	0.000	0.61	0.27
1.8 Decision-Making	1.52	0.62	0.02	28.38	0.000	0.39	0.41
2. Ability to Connect Concepts							
2.1 Identifying Relationships Between Concepts	1.00	0.55	0.02	22.97	0.000	0.31	0.18
2.2 Integrating Concepts	1.32	0.73	0.02	41.92	0.000	0.54	0.40
2.3 Connecting Known Information to the Unknown	1.21	0.84	0.01	64.64	0.000	0.71	0.38

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behavioral indicators	Factor loading		S.E.	Z	p-value	R-squared	Factor Score Coefficient
	b	β					
2.4 Building Concept Networks	1.40	0.75	0.02	46.65	0.000	0.56	0.22
2.5 Applying Logic and Reasoning	1.16	0.78	0.01	58.66	0.000	0.61	0.25
2.6 Asking Questions to Facilitate Connections	1.31	0.68	0.02	36.89	0.000	0.47	0.11
2.7 Using Connections to Solve Problems	1.26	0.84	0.01	66.28	0.000	0.71	0.33
3. Understanding the Value of Literature							
3.1 Understanding Content Value	1.00	0.62	0.02	29.63	0.000	0.56	0.33
3.2 Understanding the Value of Literary Techniques	1.36	0.66	0.02	34.11	0.000	0.61	0.61
3.3 Understanding Psychological Value	1.00	0.77	0.01	53.58	0.000	0.47	0.63
3.4 Understanding Educational Value	1.24	0.89	0.01	29.84	0.000	0.71	0.18
3.5 Understanding Aesthetic Value	1.09	0.86	0.01	27.05	0.000	0.39	0.20
3.6 Understanding Ethical and Social Value	0.83	0.88	0.01	14.98	0.000	0.43	0.15
3.7 Understanding Creative Value	1.16	0.87	0.01	61.27	0.000	0.60	0.16
4. Literary Analysis Skills							
4.1 Analyzing Literary Elements	1.00	0.75	0.02	42.06	0.000	0.80	0.15
4.2 Interpreting and Understanding Ideas	1.36	0.84	0.01	63.16	0.000	0.74	0.21
4.3 Evaluating the Value of Literary Techniques	1.00	0.75	0.02	41.09	0.000	0.78	0.40
4.4 Evaluating Social and Ethical Value	1.24	0.80	0.02	48.56	0.000	0.77	0.17

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behavioral indicators	Factor loading		S.E.	Z	p-value	R-squared	Factor Score Coefficient
	b	β					
4.5 Creating Connections and Personal Reflections	1.09	0.63	0.02	27.86	0.000	0.57	0.43
4.6 Comparing and Integrating Ideas	0.83	0.59	0.02	24.86	0.000	0.71	0.60
4.7 Considering the Author and Context of the Work	1.16	0.53	0.03	19.97	0.000	0.56	0.38
Second-Order Confirmatory Factor Analysis							
1. Analytical Thinking Skills	1.00	0.94	0.01	26.39	0.000	0.64	-
2. Ability to Connect Concepts	0.53	0.74	0.03	14.40	0.000	0.40	-
3. Understanding the Value of Literature	1.88	0.92	0.01	44.04	0.000	0.35	-
4. Literary Analysis Skills	1.56	0.82	0.02	49.64	0.000	0.28	-
χ^2= 39.15, df = 77, χ^2/df = 0.51, p-value = 0.457, CFI = 1.00, TLI = 1.00, RMSEA = 0.00, SRMR = 0.00							

The confirmatory factor analysis (CFA) of the learning achievement model for literary analysis considered the results from the first-order analysis, which examined the relationships between the four components and their respective 29 behavioral indicators. The behavioral indicators were found to have positive factor loadings, ranging from 0.46 to 0.89. Among these, the most significant indicators were Understanding Educational Value, followed by Understanding Ethical and Social Value, and Understanding Creative Value. The detailed results for each component are as follows:

Analytical Thinking Skills (CT)

The behavioral indicators for analytical thinking skills had positive factor loadings of 0.46, 0.72, 0.80, 0.78, 0.81, 0.66, 0.78, and 0.62. The variance explained by this component ranged from 21% to 66%. The most significant indicators were Evaluation (CT5), followed by Categorization (CT3) and Interpretation (CT4).

Ability to Connect Concepts (CM)

Behavioral indicators for this component had positive factor loadings of 0.55, 0.73, 0.84, 0.75, 0.78, 0.68, and 0.84. The variance explained by this component ranged from 31% to 71%. The most significant indicators were Using Connections to Solve Problems (CM6), followed by Connecting Known Information to the Unknown (CM3) and Applying Logic and Reasoning (CM5).

Understanding the Value of Literature (LA)

Behavioral indicators for this component had positive factor loadings of 0.62, 0.66, 0.77, 0.89, 0.86, 0.88, and 0.87. The variance explained by this component ranged from 39% to 71%. The most

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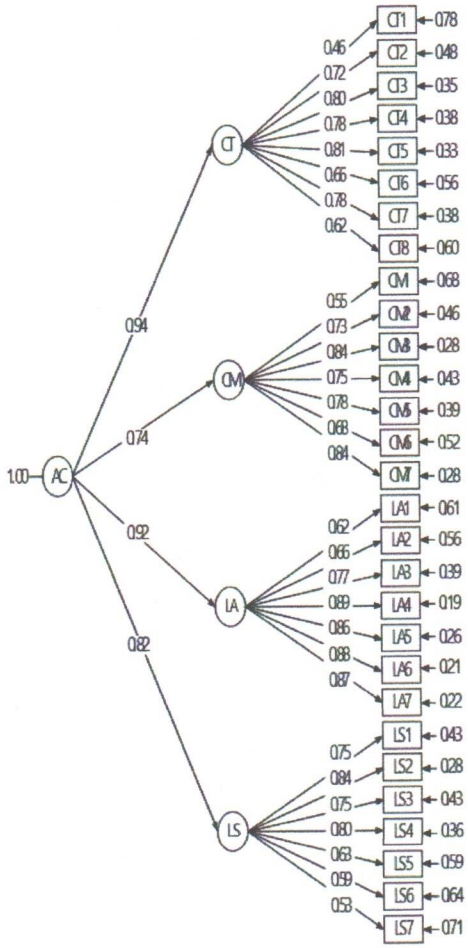
significant indicators were Understanding Educational Value (LA4), followed by Understanding Ethical and Social Value (LA6) and Understanding Creative Value (LA7).

Literary Analysis Skills (LS)

Behavioral indicators for this component had positive factor loadings of 0.76, 0.84, 0.75, 0.80, 0.63, 0.59, and 0.53. The variance explained by this component ranged from 56% to 80%. The most significant indicators were Interpreting and Understanding Ideas (LS2), followed by Evaluating Social and Ethical Value (LS4) and Analyzing Literary Elements (LS1).

When considering the results of the second-order CFA, which examined the relationships between the overarching learning achievement construct in literary analysis (AC) and the four components—Analytical Thinking Skills (CT), Ability to Connect Concepts (CM), Understanding the Value of Literature (LA), and Literary Analysis Skills (LS)—the factor loadings were all positive, with values of 0.94, 0.74, 0.92, and 0.82, respectively. The shared variance with the learning achievement construct ranged from 28% to 64%. Among the components, the most significant were Analytical Thinking Skills (CT), followed by Understanding the Value of Literature (LA), Literary Analysis Skills (LS), and the Ability to Connect Concepts (CM).



χ^2= 39.15, df = 77, χ^2/df = 0.51, p-value = 0.457, CFI = 1.00, TLI = 1.00, RMSEA = 0.00, SRMR = 0.00

Figure 1. Confirmatory factor analysis of the learning management plan

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Table 3. Participants' satisfaction with the learning management plan

Item	$\bar{x}$	S.D.	Interpretation
I gained knowledge from the learning activities.	4.53	0.67	Very high
I understood the content taught by the teacher.	4.32	0.89	High
I was able to apply the knowledge gained from the learning activities.	4.68	0.49	Very high
The learning activities were interesting.	4.58	0.54	Very high
The teacher was able to convey knowledge and provide examples fully.	4.74	0.68	Very high
I liked the teacher's approach to learning management.	4.32	0.44	มาก
The teaching method helped me gain a better understanding of the content.	4.65	0.78	Very high
I want this teaching method to be used in other topics as well.	4.73	0.65	Very high
I felt happy during the learning activities.	4.53	0.47	Very high
The teaching activities aligned with the content and learning objectives.	4.37	0.45	High
Overall	4.55	0.61	Very high

Table 3 summarizes participants' satisfaction with the learning management plan. The study results indicate that the participants satisfied with the learning experiences in concept mapping learning management plan at a very high level ($\bar{x}$ = 4.55, S.D. = 0.61). Key aspects of the plan received strong feedback: the learning activities were engaging and interesting, the teacher's approach and knowledge delivery were effective, and the teaching materials and methods were well-aligned with learning objectives. Additionally, participants expressed a desire to see this teaching method applied to other topics, indicating a high level of satisfaction with both the content and the overall teaching approach.

5. Discussion

The results indicate that concept mapping was effective in enhancing participants' literary analysis skills. This aligns with findings from previous studies (e.g., Hazaymeh & Alomery, 2022; Kim et al., 2021; Lumontad et al., 2020; Nair & Said, 2020; O'Day & Karpicke, 2021; Oliver, 2009; Ta & Razali, 2023; Tajeddin & Tabatabaei, 2016), which demonstrated the benefits of concept mapping in improving reading comprehension and critical thinking. However, this study adds a new contribution by demonstrating that concept mapping can also support the development of more advanced cognitive skills required for literary analysis, going beyond surface-level comprehension to engage with deeper, more interpretative tasks.

The effectiveness of concept mapping in this context can be attributed to its capacity to help students think systematically. As students were asked to create concept maps in analyzing literature,

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they were able to visually organize various elements of literary texts, such as characters, themes, and literary devices. This visual structure allowed them to see relationships between different components, which is essential for analysis (Kusch, 2016; Miall, 2006). For instance, students could group literary devices like metaphors and similes, link them to thematic elements, and understand how these contribute to the author's message. Moreover, by mapping out the social and historical background of the texts, students could place the literary work within a broader context, enriching their analysis and interpretation.

The results of the confirmatory factor analysis (CFA) further validated the effectiveness of the learning management plan. The CFA demonstrated that the structure of the intervention aligned with its intended objectives, with significant relationships among the components and behavioral indicators. This analysis provided evidence of the construct validity of the learning management plan, ensuring that the intervention was theoretically sound and capable of targeting the specific skills required for literary analysis. The CFA results strengthen the findings by confirming that the observed improvements in literary analysis skills were grounded in a well-designed and valid framework.

This systematic approach supported by concept mapping likely helped students to break down complex information into manageable parts, promoting a more coherent and organized analytical process (Trochim & McLinden, 2017). Rather than approaching literary analysis as an isolated activity, concept mapping provided a structured framework, encouraging students to explore connections and build a comprehensive understanding of the text (Trochim, 1989). This aligns with the cognitive benefits outlined in earlier research but expands the understanding of concept mapping's effectiveness by showing that it can facilitate higher-order thinking skills, such as analyzing, evaluating, and synthesizing, as required in literary analysis.

6. Conclusion

This study demonstrated that concept mapping is an effective tool for developing literary analysis skills among high school students. It adds a piece of evidence to support concept mapping as a tool that can facilitate deeper comprehension and analysis, helping students connect themes, literary devices, and contextual background more effectively. Furthermore, the confirmatory factor analysis (CFA) results validated the construct validity of the learning management plan, confirming that its design aligned with its intended objectives and effectively targeted the skills required for literary analysis. These findings contribute to the growing body of research supporting the use of concept mapping in language classrooms, specifically extending its application beyond reading comprehension to more advanced analytical tasks in literary studies.

7. Suggestions

The results of this study have important implications for educators seeking to improve students' analytical skills in literature. Integrating concept mapping into literary analysis instruction could support students in building a systematic approach to interpreting complex texts. Educators may consider incorporating concept mapping into other areas of the curriculum where higher-order thinking skills are required, such as history or social studies.

However, limitations should be acknowledged. It could be accepted that it lacked a comparative group, which limits the ability to attribute improvements in literary analysis skills solely to the concept mapping intervention. Future research could include a control or comparative group to strengthen the validity of the findings. Additionally, the study used only quantitative methods, which may not fully capture the depth of students' experiences with concept mapping. Incorporating a qualitative approach, such as interviews or focus groups, could provide richer insights into how students perceive and engage with concept mapping in their literary analysis.

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Declarations

Author Contributions. Kullanut Phoosomphong: Literature review, conceptualization, and data collection.Autthapon Intasena: Corresponding author, Methodology, data analysis, and supervision. Thussaneewan Srimunta: Review, editing, and manuscript preparation. Nattapon Yotha: Validation, data visualization, and critical revisions. All authors have read and approved the final version of the article for publication.

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Ethical Approval. This study was conducted in compliance with ethical standards and was approved by the [Name of Ethics Committee], under approval number [Reference Number]. All participants provided informed consent prior to participation, and their privacy and confidentiality were protected throughout the study.

Data Availability Statement. The data supporting the results reported in this study are available from the corresponding author upon reasonable request.

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