

The Results of Learning Management Using the 5T Strategy Combined with Reading Maps and Workbooks for Developing Reading Literacy Skills of Mathayomsuksa 3 Students at Wadthupman School, under the Uthaithani Primary Educational Service Area Office 2, Thailand

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Abstract

The research aimed to 1) determine the effectiveness of the reading literacy workbooks, and 2) compare the students' reading ability before and after learning through the using of the 5T Strategy combined with reading maps and workbooks for developing reading literacy skills. The sample group consisted of 37 students from Mathayomsuksa 3/2 selected by using purposive sampling method. The research was conducted in the second semester of the 2024 academic year. The research instruments included lesson plans, reading literacy workbooks, and pre- tests and post-tests that were validated by experts.

The results of this research revealed that the learning management using the 5T Strategy combined with reading maps and workbooks showed a process efficiency ($E1=82.34$) and a result efficiency ($E2=84.05$), which were significantly higher than the set criterion of 80/80. Furthermore, the students' mean post-test score of reading literacy skills ($\bar{x}=16.81$, S.D. = 1.54) was higher than the pre-test score ($\bar{x}=11.27$, S.D. = 1.69) of statistically significance at the .05 level. This indicates that the learning management using the 5T Strategy combined with reading maps and reading literacy workbooks effectively enhanced students' reading literacy skills. The findings were consistent with the concept of cooperative learning, which emphasized social interaction and group assistance, contributing positively to the development of students' reading abilities in accordance with the PISA framework.

Keywords: Reading Literacy, 5T Strategy, Reading Maps, Workbooks

1. Introduction

In the 21st century, reading ability is no longer limited to decoding words and understanding basic meanings; it also encompasses the ability to analyze, synthesize, and evaluate information from multiple sources critically. These are core competencies defined in the Program for International Student Assessment (PISA) framework by the Organization for Economic Co-operation and Development (OECD), which emphasizes developing learners' capacity to apply knowledge and skills in real-life contexts (OECD, 2019).

According to the PISA 2022 assessment report, Thai students' average reading literacy scores have consistently remained below the OECD average, particularly in areas involving comparing and evaluating information from various sources and reflecting on authors' perspectives, which are crucial components of higher-order reading skills (OECD, 2021). In

response, the Ministry of Education and the Office of the Basic Education Commission (OBEC) have made the improvement of PISA performance a national priority. Policies have been implemented to promote the development of higher-order thinking, media literacy, problem-solving, and critical reading skills through enhanced curricula, innovative learning processes, and competency-based assessments aligned with the OECD framework. Moreover, initiatives such as the PISA School Network and nationwide teacher training programs have been established to empower educators in designing learning experiences that effectively enhance students' achievement (OBEC, 2024; Ministry of Education, 2024).

A review of related research and an analysis of reading literacy assessment results among Mathayomsuksa 3 students at Wadthupman School, under the Uthai Thani Primary Educational Service Area Office 2, Thailand revealed that students' reading literacy scores were below the school's expected standard, consistent with the national trends. The main causes included limited vocabulary knowledge, inability to identify purposes and sequence events, difficulty summarizing main ideas in complex texts, and weakness in comparing and reasoning across multiple information sources (Santiwat Chandai, 2017; Siwakan Pathumsuti, 2011; Chall & Curtis, 2003). These weaknesses reflect essential reading skills identified in the PISA framework and are also critical competencies for learners in the digital age.

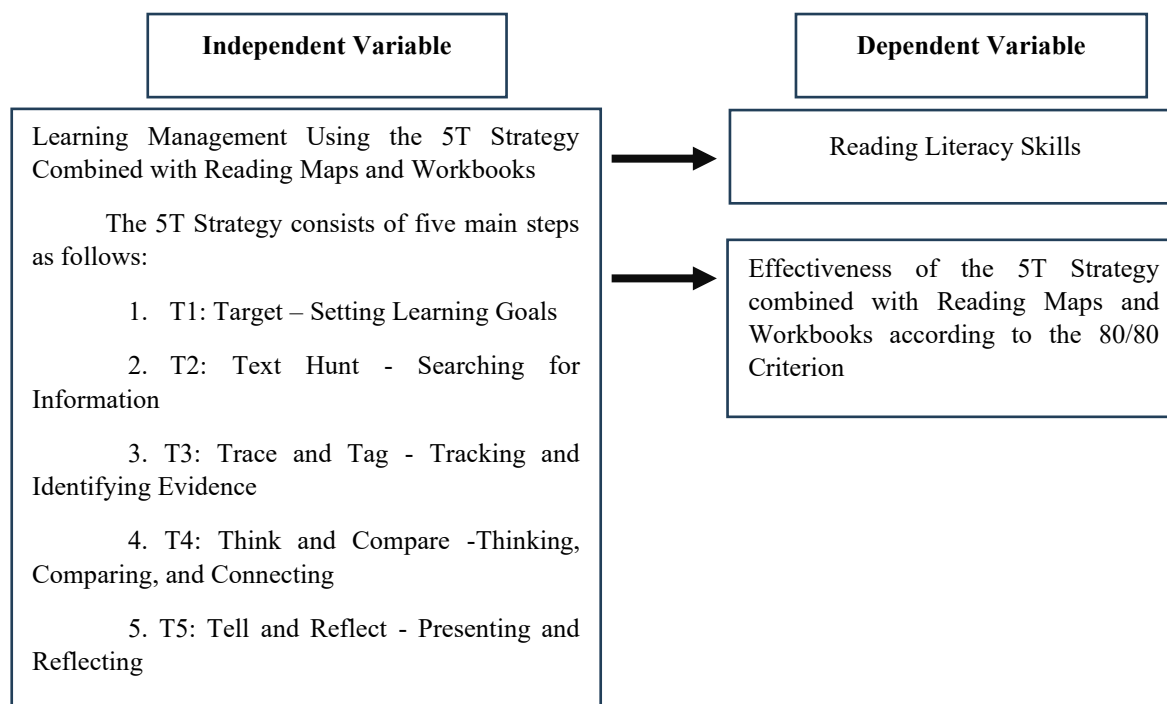
According to Satthapong, T., & Eakwannang, W. (2020), "the using of reading strategies enhances learners' understanding by helping them connect new knowledge with prior experiences through social interaction and collaborative learning." Similarly, Sanga Wongchai (2020) emphasized that developing reading literacy requires strategic learning management designed to strengthen students' comprehension and critical thinking, aligning with PISA goals. This integrated approach combines elements of FIVES, High 5, and POSSE models into six systematic steps—exploring content, identifying vocabulary, organizing information, analyzing relationships, engaging in discussions, and summarizing in writing—to promote reading literacy, higher-order thinking, and collaboration, which are vital skills for the 21st century.

Therefore, the researcher developed a teaching model using the 5T Strategy combined with reading maps to enhance students' reading literacy skills. The 5T Strategy promotes active learning by encouraging students to learn vocabulary, comprehend texts, and apply knowledge through systematic language practice. This strategy effectively integrates language skills and cognitive processes (Shea & Roberts, 2016), providing a practical solution to improve students' reading literacy in accordance with the Basic Education Core Curriculum and the Ministry of Education's policy to prepare learners for PISA reading literacy assessment.

2. Objective

1. To determine the effectiveness of the reading literacy workbooks for developing the reading literacy skills of Mathayomsuksa 3 students through learning management using the 5T Strategy combined with reading maps.
2. To compare the reading literacy skills of Mathayomsuksa 3 students before and after learning through the using of the 5T Strategy combined with reading maps.

Figure 1: The Conceptual Framework of the Study



3. Methodology

1. Population and Sample

1.1 Population

The population consisted of Mathayomsuksa 3 students enrolled in the second semester of the 2024 academic year at Wadthupman School, under the Uthai Thani Primary Educational Service Area Office 2, Thailand.

1.2 Sample

The sample was selected using purposive sampling method consisting of 37 students from Mathayomsuksa 3/2 at Wadthupman School.

2. Research Instruments

The research instruments used in this research were divided into two types:

2.1 Instruments for Conducting the Research

2.1.1 Lesson plans collaborative learning lesson plans using the 5T Strategy combined with reading maps with a total of 8 instructional hours. (The lesson plans were evaluated by 3 experts and rated as appropriate)

2.1.2 Reading Literacy Workbooks were evaluated by 3 experts and rated as appropriate.

2.2 Instruments for Data Collection

Pre-test and Post-test on reading literacy skills developed to assess students' reading literacy before and after the learning intervention to validated by 3 experts with an Item-Objective Congruence (IOC) index greater than 0.5, difficulty index (p): ranged from 0.62 to 0.78, discrimination index (r): ranged from 0.58 to 1.00, reliability (KR-20): 0.81 indicating high reliability.

3. Data Collection

The researcher collected data through three main stages: 1) Pre-experiment stage 2) Experiment Stage and 3) Post-experiment stage

3.1 Pre-experiment stage: The researcher collected data from the sample group in the pre-experiment stage as follows:

3.1.1 Problem investigation and literature review: The researcher examined the existing problems in students' reading literacy, conducted a literature review to explore methods for improving learning management and developed the research topic based on the findings to guide the study.

3.1.2 Preparation of research instruments: The researcher prepared the instruments used in the experiment including: proactive lesson plans using the 5T Strategy combined with reading maps, Pre-test and post-test on reading literacy skills to measure students' performance before and after the learning intervention.

3.2 Experiment Stage

The researcher conducted the experiment and data collection over 8 instructional hours with the sample group as follows:

Hour 1 – Pre-test and introduction administered the pre-test to Mathayomsuksa 3/2 students at Wadthupman School, Uthaitani Province, to assess initial reading literacy skills, recorded the scores as the pre-test results, explained and clarified the learning management using the 5T Strategy combined with reading maps and workbooks to prepare students for the intervention.

Hours 2–7 – Implementation of learning activities conducted learning according to the 5T Strategy combined with reading maps, using Reading Maps for 6 hours. Students followed the 5T process continuously as described below:

T1: Target – Setting Goals: Students set reading goals for each text or information source such as identifying conclusions, comparing perspectives, and evaluating authors' intentions. This step ensured students had a clear purpose and direction before analyzing the content.

T2: Text Hunt – Searching for Information: Students gathered information from diverse sources such as news articles, books, websites, and opinion pieces and emphasized responsible use of digital tools during information gathering.

T3: Trace and Tag – Tracking and Identifying Evidence: Students analyzed content and highlighted key information using Reading Maps designed by the teacher. Reading maps helped students organize thoughts systematically before, during, and after reading. Students recorded important points from each source, compared differences in perspectives or facts, and reflected on their own conclusions with evidence, supporting systematic tracking of key ideas, facts, opinions, and author intentions.

T4: Think and Compare – Comparing and Connecting: Students analyzed and compared content, credibility, and differing viewpoints, integrated role-playing activities, where students assumed roles such as journalists, students, teachers, parents, or experts. Students expressed opinions or debated from their assigned roles, based on studied sources, fostering critical thinking, reasoning, argumentation, and social interaction.

T5: Tell and Reflect – Presenting and Reflecting: Students shared what they had learned through reflective writing, group discussions, presentations, and creative activities and used their Reading Maps as evidence to support reasoning. Activities included classroom debates, mock news reports, or scenario-based role-plays, promoting analytical thinking and

systematic academic communication. Students completed a Reading Map worksheet each hour and stored their work in personal portfolios for continuous assessment.

Hour 8 – Post-Test and Evaluation: Administered the post-test to assess students' reading literacy after the intervention recorded the results as post-test scores. Teachers used students' portfolios, classroom observations, group discussions, and individual feedback to evaluate performance and provide personalized guidance, helping both teachers and students adjust learning and teaching strategies according to individual abilities and development effectively.

3.3 Post-Experiment Stage

The researcher scored the post-tests and checked the completeness and accuracy of all collected data. In cases where student scores were incomplete, follow-up testing was conducted to ensure all data were available. The effectiveness of the 5T Strategy combined with reading maps was then calculated. All data were organized and prepared for subsequent analysis.

4. Results

The research entitled "The Results of Learning Management Using the 5T Strategy Combined with Reading Maps and Workbooks for Developing Reading Literacy Skills of Mathayomsuksa 3 Students at Wadthupman School, under the Uthaithani Primary Educational Service Area Office 2, Thailand" research findings:

Table 1:

Efficiency of reading literacy workbooks using the 5T Strategy combined with reading maps

Assessment	N	Full Score	Total Score	$\bar{x}$	Efficiency
During Learning	37	15	457	12.35	82.34
After Learning	37	20	622	16.81	84.05

From Table 1, Based on the table showing the efficiency of the reading literacy skill exercises using the 5T Strategy combined with reading maps, the results indicate that the process efficiency (E1) was 82.34 and the outcome efficiency (E2) was 84.05. This demonstrates that the reading literacy skill exercises developed through the 5T Strategy combined with reading maps have both process efficiency and outcome efficiency (E1/E2) higher than the set criterion of 80/80, indicating that the exercises are highly effective.

Table 2:

Comparison of students' reading literacy skills before and after learning using the 5T Strategy combined with reading maps

Assessment	N	$\bar{x}$	S.D.	t	Sig
Pre-test	37	11.27	1.69		
Post-test	37	16.81	1.54	24.67*	0.000

From Table 2, Based on the table comparing students' reading literacy skills before and after learning using the 5T Strategy combined with reading maps, the results are as follows:

The pre-test scores had a mean of 11.27 and a standard deviation of 1.69. The post-test scores had a mean of 16.81 and a standard deviation of 1.54.

5. Conclusion and Discussion

The results of learning management using the 5T Strategy combined with reading maps and workbooks for developing the reading literacy skills of Mathayomsuksa 3 students at Wadthupman School, under the Uthaitani Primary Educational Service Area Office 2, Thailand, can be discussed as follows:

1. Effectiveness of reading literacy workbooks using the 5T Strategy and reading maps was found that the reading literacy workbooks developed using learning management combined with the 5T Strategy and reading maps had a process efficiency (E1) of 82.34 and an outcome efficiency (E2) of 84.05. These values exceed the set criterion of 80/80, indicating that the exercises are highly effective. The high effectiveness is attributed to several factors: The researcher applied established theories and principles for designing effective exercises, including an analysis of students' reading comprehension difficulties as a basis for designing the exercises. The content and suitability of the exercises were reviewed and validated by experts before implementation, ensuring that the exercises were appropriate, engaging, and aligned with learning objectives. The exercises incorporated principles of psychologically sound instructional design, including content appropriateness, clear language, challenge to students' abilities, and built-in assessment, as suggested by Nattakan Lertyaso (2010). These findings are also consistent with Nattakan Lertyaso (2020), which reported that developing reading skills using collaborative learning combined with reading exercises resulted in high learning efficiency exceeding the 80/80 criterion, with E1/E2 values of 88.20/81.13. This demonstrates that integrating high-quality skill exercises with learning management using the 5T Strategy is a critical factor in effectively enhancing students' reading literacy skills.

2. The research confirms that learning management using the 5T Strategy combined with reading maps and workbooks can effectively develop students' reading literacy skills. The post-test scores were significantly higher than the pre-test scores ($p < .05$). This improvement can be attributed to the characteristics of the instructional design, which emphasizes collaborative learning through mixed-ability groupings and structured group processes based on the 5T Strategy. This approach encourages peer assistance, opinion sharing, and interactive learning, aligning with Vygotsky's (1978) social interaction theory, which highlights the importance of social interaction in reading comprehension. This result also supports the findings of Satthapong, T., & Eakwannang, W. (2020), who reported that instructional models emphasizing social interaction significantly enhance reading literacy according to PISA standards. Therefore, this finding has important implications for implementing the 5T Strategy as a policy-level approach to improving students' literacy skills.

Implementation of the 5T Strategy in Active Learning Step 1 – Preparation Teachers prepared students before the lesson to stimulate interest and readiness, explaining the topic and learning activities using varied materials and media. Students were grouped by mixed ability (high, medium, low), and teachers clarified learning processes and assessment criteria. This step aligns with Thorndike's (1927) Law of Readiness, which states that learners perform better when physically and mentally prepared. Proper preparation enhances students' ability to connect prior knowledge with new knowledge and fosters positive teacher-student relationships. Step 2 – Instruction Teachers facilitated group learning, reviewed prior knowledge, and guided students to study reading content and discuss it within their groups.

Step 3 – Group Activities Students performed reading activities using the skill exercises, assisting one another within the group. High-performing students helped weaker peers, following Thitsana Khaemmani (2010), who emphasized that the success of cooperative learning depends on the contribution of all members and mutual support for shared goals.

These group activities enhanced the effectiveness of reading skill development. Step 4 - Summary and Evaluation Teachers and students collaboratively summarized lessons and presented group work. Students completed individual tests without peer assistance. Teachers assessed individual and group performance and awarded the top three groups to provide positive reinforcement, consistent with Skinner's (1950) positive reinforcement theory, which states that providing desirable rewards increases the likelihood of repeated behaviors. Feedback and reinforcement created an engaging learning environment, motivating students and enhancing their reading skills. Role of Skill Exercises In addition to 5T Strategy-based learning, skill exercises were used to develop students' reading literacy further. Reading literacy requires practice and systematic skill development, and skill exercises provide opportunities to practice reading, analytical thinking, and writing. As noted by Thawan Mascharat et al. (2020), skill exercises serve as learning media for problem-solving, supporting students in developing knowledge, skills, and attitudes in various areas. Similarly, Nantika Wongyai kam and Kanjana Wichayapakorn (2022) reported that combining cooperative learning with reading exercises significantly improved Mathayomsuksa 3 students' reading literacy, with post-test scores higher than pre-test scores at a significant level ($p < .05$).

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