FOSTERING TLE PROFICIENCY THROUGH MC-SLAM: A MATATAG CURRICULUM-BASED SELF-LED AUTONOMOUS MODULE FOR GRADE 7

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ABSTRACT

Technology and Livelihood Education (TLE) provides practical skills in junior high school. It helps students find jobs, become self-sufficient, and develop new ideas. However, teachers often struggle to keep Grade 7 students interested in TLE. The Department of Education recently launched the MATATAG Curriculum. It aims to build basic skills and life skills across different subjects (Department of Education, 2023). This education plan from the Department of Education seeks to create well-rounded students ready for life and work challenges (Department of Education, 2023). The full use of the MATATAG Curriculum at Silae National High School has brought both benefits and challenges. The curriculum's content shows promise. However, the main problem in delivering it has been the lack of available textbooks.This absence of learning materials has created major problems for students, especially in preparing for regional quarterly exams. Without textbooks, students must write down important information into their notebooks. This process greatly slows down lessons. This slower teaching often stops teachers from finishing the planned curriculum each quarter. As a result, students miss information. They then take standardized regional tests covering content that may not have been fully taught in class. This gap between what is covered and what is tested poses a big challenge to student learning at Silae National High School. Data from pre-tests and post-tests show a large gain in school performance for Grade 7 TLE students. This happened after they used the Modified Contextualized – Strategic Learning Approach in Modules (MC–SLAM). Before the change, 70% of students did not meet the expected score, getting less than 18 out of 30 points. Only 7.5% reached a Satisfactory level or better. After the change, the number of students who "Did Not Meet Expectations" fell a lot, to 17.07%. Also, 51.22% of students reached Satisfactory to Outstanding performance levels. The average score went from 15.41 to 21.85, showing much academic growth. The paired samples t-test results show that the Matatag Curriculum-based Self-Led Autonomous Module (MC–SLAM) helps Grade 7 students learn Technology and Livelihood Education (TLE). Student scores increased from the pretest (15.41) to the posttest (21.85). The average difference was -6.439 (SD = 4.261). This difference was significant, t(40) = -9.68, p < .001. This means the improved posttest scores came from the teaching method, not from chance.

Keyword: academic proficiency, MC-SLAM, Technology and Livelihood Education

1. INTRODUCTION

Technology and Livelihood Education (TLE) provides practical skills in junior high school. It helps students find jobs, become self-sufficient, and develop new ideas. However, teachers often struggle to keep Grade 7 students interested in TLE. This happens for many reasons, including the belief that TLE subjects are not relevant to daily life (Reyes & Santos, 2021). To address this, the Department of Education (DepEd) introduced the MATATAG Curriculum. This curriculum focuses on life skills and values: humanity, nationalism, environmental awareness, and patriotism. It seeks to inspire more active participation and dedication in subjects like TLE (Department of Education, 2023).

The Department of Education recently launched the MATATAG Curriculum. It aims to build basic skills and life skills across different subjects (Department of Education, 2023). This education plan from the Department of Education seeks to create well-rounded students ready for life and

work challenges (Department of Education, 2023). The name "MATATAG" stands for its main goals: making the curriculum relevant to create skilled, job-ready, active, and responsible citizens; taking steps to speed up delivery of basic education facilities and services; taking good care of learners by promoting well-being, inclusive education, and a positive learning setting; and giving support to teachers to teach better (DepEd, n.d.-a).

For Grade 7 Technology and Livelihood Education (TLE), the MATATAG Curriculum offers a more focused approach. It emphasizes learning one specific skill each quarter for every TLE component. It also sets aside time for students to learn and show their skills. This plan addresses past concerns about excessive content and repetitive skills. It aims for deeper learning and practical use. The curriculum review examined thinking and feeling demands, the connections between topics, and consulted with Master Teachers. It found areas for improvement, such as undeveloped business skills.

A key part of the MATATAG TLE curriculum is its inclusion of 21st-century skills. These include critical thinking, problem-solving, working together, communicating, and digital skills. The goal is to give students useful skills that lead to local and global job readiness and production. It also develops self-care and home management abilities. The curriculum promotes an exploratory method. It groups specializations within the same industry sector. This gives students a wider understanding of different job options, preparing them for future "life and work." This basic learning in Grade 7 is important for more specific TLE and Technical-Vocational-Livelihood (TVL) track specializations in higher grades.

While the MATATAG Curriculum presents a promising framework for enhancing the quality of education, its implementation poses significant challenges. One of the primary issues is the unavailability of essential learning materials, such as textbooks and instructional guides. As a result, students are compelled to manually copy information from the blackboard, a time-consuming process that limits engagement and reduces opportunities for in-depth learning. Moreover, teachers, who serve as the frontline implementers of the curriculum, face difficulties in covering all prescribed competencies within the given timeframe. This challenge became evident during the recent Regional Unified Quarterly

Assessment, where many students demonstrated low academic performance. In the previous quarter's TLE examination, for instance, only 7 out of 38 students achieved passing scores, underscoring the urgent need to address the gaps in curriculum implementation and resource provision.

This absence of learning materials has created major problems for students, especially in preparing for regional quarterly exams. Without textbooks, students must write down important information into their notebooks. This process greatly slows down lessons. This slower teaching often stops teachers from finishing the planned curriculum each quarter. As a result, students miss information. They then take standardized regional tests covering content that may not have been fully taught in class. This gap between what is covered and what is tested poses a big challenge to student learning at Silae National High School.

To improve TLE students' skills and content knowledge within this framework, a Self-Directed Learning (SDL) approach like MC-SLAM (Matatag Curriculum - Self-Led Autonomous Modules) helps. Teachers can use MC-SLAM modules in TLE classes in different ways. For example, teachers can set up mixed learning stations. Students can move between hands-on activities and self-paced digital modules. This directly supports the "one skill per component" focus of the MATATAG Curriculum and promotes active learning. These modules also allow for different teaching methods. Advanced students can explore complex topics, and those needing more help can review concepts at their own speed. This matches the curriculum's focus on inclusive education.

By using SLMs made for the MATATAG Curriculum, teachers can offer flexible, self-directed resources. These allow students to work on complex tasks at their own speed (Villanueva, 2022). Research shows that self-paced learning materials increase student motivation. They also give students a sense of ownership over their learning. This helps in subjects that need skill use rather than memorization (Gonzales, 2020). When used in TLE, SLMs help students understand how their learning applies to the real world. This leads to deeper engagement with performance tasks and a better overall learning experience.

2. STATEMENT OF THE PROBLEM

This study looked at how the MC – SLAM program affected the school performance of Grade 7 TLE students at Silae National High School during the 2024-2025 school year.

It specifically answered these questions:

1. What was the school performance of Grade 7 TLE students before and after using MC – SLAM?

2. Is there a significant change in students' academic performance after using MC-SLAM?

3. Does the use of MC-SLAM significantly improve the academic performance of Grade 7 TLE students?

3. METHODOLOGY

3.1 Research Design

This research employed a pre-experimental design, specifically the One-Group Pretest–Posttest Design. The independent variable in this study was the MC-SLAM intervention (Matatag Curriculum – Self-Led Autonomous Modules), while the dependent variable was the students' TLE proficiency. This design examined a single group—the Grade 7 students of Silae National High School—both before and after the implementation of the MC-SLAM intervention.

3.2 Locale of the Study

The research was conducted in one of the public schools of the Division of Malaybalay City. The data was gathered from 41 Grade 7 students of the said school. The researchers sought to know how their innovation impact on Grade 7 learners academic performance.

3.3 Participants of the Study

The study included all Grade 7 TLE students officially enrolled in one of the public schools in the Division of Malaybalay City, for the School Year 2024–2025. The participants came from diverse socioeconomic backgrounds, with many belonging to low- to middle-income households, typical of learners in a rural public-school setting. Most students had limited prior exposure to Technology and Livelihood Education (TLE), as it was their first formal encounter with the subject in junior high school. This diversity extended to their learning abilities, motivation levels, and access to learning resources, which were carefully considered in the design of the MC-SLAM. The modules were developed with differentiated activities, simplified language, and contextualized examples to address varying levels of comprehension and skill proficiency. All Grade 7 TLE students enrolled in the school served as the participants of the study, comprising the entire group for the planned intervention, ensuring inclusivity and representation of the school's learner population.

Table 1. Number of Participants

	MALE	FEMALE	TOTAL
GRADE 7 - LOVE	12	9	21
GRADE 7- LOYALTY	11	9	20
Total			41

3.4 Data Gathering Procedure

The data collection for this pre-experimental, quantitative study on MC-SLAM (Matatag Curriculum - Self-Led Autonomous Modules) measured the intervention's effect on TLE proficiency in one group of Grade 7 students. The process started with a pre-test given to all students. This test set their starting TLE skill level based on the Matatag Curriculum. The pre-test used standard objective and practical assessments of basic skills. This gave a clear number for each student's skill level before the intervention.

After the pre-test, students used the MC-SLAM modules for one quarter. To measure progress, smaller tests were given at the end of each module. These tests consistently measured student skill and showed small improvements during the intervention. Scores from each module were recorded to follow growth in specific TLE skills.

At the end of the intervention, students took a post-test that was the same as the pre-test. This allowed for a direct comparison of scores before and after the intervention. The post-test checked students' understanding of the same TLE skills, helping to analyze learning gains. Data from pre-tests, smaller tests, and post-tests were analyzed with statistics. This determined how well the MC-SLAM intervention improved TLE proficiency. By focusing only on numbers, this data collection

gave clear, factual proof of the program's effect on student learning.

3.5 Statistical Techniques

This study employed both descriptive and inferential statistical methods to comprehensively answer the research questions. For the first research problem, descriptive statistics were used to present an overview of the students' academic performance in TLE before and after the implementation of the MC-SLAM intervention. Measures such as the mean, standard deviation, and frequency distribution were computed to describe the central tendency and variability of scores, providing a clear picture of students' proficiency levels and overall progress.

For the second research problem, a paired sample t-test was conducted to determine whether there was a significant difference in the pre-test and post-test scores of Grade 7 TLE students. Before performing the analysis, the assumptions of the t-test—particularly the normality of the difference scores—were verified using the Shapiro–Wilk test and visual inspections through histograms and Q–Q plots to ensure the validity of the results.

Addressing the third research question, which asked whether the use of MC-SLAM significantly improves the academic performance of Grade 7 TLE students, the results of the paired t-test were supplemented with the computation of the effect size (Cohen's d). This provided a measure of the magnitude of improvement beyond statistical significance, allowing for a more meaningful interpretation of the intervention's practical impact. Together, these analyses offered a robust understanding of how MC-SLAM influenced students' learning outcomes and the extent to which it enhanced their performance in TLE.

4. RESULTS AND DISCUSSION

This section shows and discusses the statistical data collected. The analysis led to a full interpretation. Tables and figures are presented to match the problems.

Table 3. Academic Performance Level of Grade 7 Learners Pre-test **and Post-test usin**g MAC-SLAM.

Achievement Level	Range of Score	Pre-test Frequency	Pre-test %	Post-test Frequency	Post-test %
Outstanding	28-30	0	0%	10	24.39%
Very Satisfactory	25-27	1	2.50%	3	7.32%
Satisfactory	22-24	2	5.00%	8	19.51%
Fair Satisfactory	18-21	9	22.50%	13	31.71%
Did not meet the expectation	0-17	28	70.00%	7	17.07%
Mean Score		15.41		21.85	
SD		4.07		5.17	
Achievement Level		Fairly Satisfactory		Satisfactory	

Data from the pre-tests and post-tests indicate a significant improvement in the academic performance of Grade 7 TLE students after the implementation of the Matatag Curriculum–based Self-Led Autonomous Modules (MC–SLAM), specifically during the fourth quarter covering Industrial Arts. Before the intervention, 70% of students scored below the expected level, obtaining less than 18 out of 30 points, and only 7.5% achieved a *Satisfactory* level or higher. After the intervention, the proportion of students who *Did Not Meet Expectations* dropped markedly to 17.07%, while 51.22% reached *Satisfactory* to *Outstanding* performance levels. The mean score increased from 15.41 to 21.85, reflecting substantial academic growth and improved mastery of Industrial Arts competencies.

This upward trend suggests that the MC–SLAM intervention effectively strengthened students' understanding and application of Industrial Arts skills. The contextualized and self-paced design of the modules allowed learners to relate concepts to practical, real-life tasks. One student reflected, *"The lessons on Industrial Arts became easier to understand because I could connect them to what I do at home, like basic repairs and crafting."* Such feedback illustrates how contextual learning fosters deeper comprehension and engagement. This finding aligns with Berns and Erickson (2001), who emphasized that linking school activities to real-world experiences enhances student understanding and knowledge retention.

The strategic learning features embedded in MC–SLAM also encouraged students to take greater responsibility for their learning. Through reflection activities and guided self-assessments, they developed metacognitive awareness and better study habits. As one student noted, *"The*

modules helped me manage my time and check my own progress after every task." This supports Weinstein, Acee, and Jung (2011), who highlight that explicit learning strategies help students monitor and regulate their own learning—an essential skill in self-paced and modular education.

The results also support the principle of differentiated instruction described by Tomlinson (2014), which emphasizes adapting instruction to address varying learner needs. The substantial decrease in the number of underperforming students and the rise in high achievers demonstrate that MC–SLAM provided equitable learning opportunities across ability levels. Notably, 24.39% of students achieved an Outstanding rating in the post-test—an accomplishment not seen before the intervention—indicating that the approach not only addressed learning gaps but also created pathways for excellence.

The increase in standard deviation from 4.07 to 5.17 indicates greater variability in performance, suggesting that while all students improved, some demonstrated exceptional progress. Factors such as individual motivation, self-discipline, and home learning environments may have contributed to these variations. Nevertheless, the overall improvement shows that MC–SLAM was effective in enhancing Industrial Arts learning outcomes.

These findings support the Department of Education's (DepEd, 2020) call for contextualized and flexible learning materials under the K to 12 and MATATAG Curriculum frameworks. The modules' focus on locally relevant examples and practical applications aligns with DepEd's vision of an inclusive and responsive education system.

In the long term, the positive results from this pilot suggest that MC–SLAM has strong potential for sustainable integration into the TLE curriculum. With continued refinement, teacher training, and periodic student feedback, it can serve as an effective model for promoting self-directed learning in other grade levels and subject areas.

Table 4 *Paired Differences of grade 7 students' pre-test and post-tests performances in TLE class before and after using the MAC-SLAM*

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pretest - Postest	-6.439	4.261	0.665	-7.784	-5.094	-9.68	40	p < .001

The results of the paired samples t-test indicated that the Matatag Curriculum-based Self-Led Autonomous Module (MC–SLAM) significantly improved the Technology and Livelihood Education (TLE) performance of Grade 7 students. The mean score increased from the pretest (M = 15.41, SD = 4.32) to the posttest (M = 21.85, SD = 4.18), resulting in a mean difference of -6.44 (SD = 4.26). This difference was statistically significant, $t(40) = -9.68$, $p < .001$, suggesting that the improvement in posttest scores was not due to chance but was a result of the MC–SLAM intervention.

The 95% confidence interval (CI) for the mean difference ranged from -7.78 to -5.09, confirming that the true mean difference was not zero. Since the entire interval was below zero, it can be concluded with 95% confidence that students' posttest scores were consistently higher than their pretest scores. The computed effect size (Cohen's d = 1.51) indicated a very large practical effect, demonstrating that the MC–SLAM intervention had a strong and meaningful impact on improving students' learning outcomes.

The observed improvement in performance may be attributed to the principles of constructivism, metacognitive learning, and self-directed learning (SDL) embedded in the MC–SLAM framework. MC–SLAM encourages learners to take active responsibility for their own learning, which is a core tenet of SDL. According to Knowles (1975), self-directed learning occurs when learners take the initiative—individually or with others—in diagnosing their learning needs, setting goals, finding resources, and evaluating outcomes. Within MC–SLAM, students were guided to plan their learning tasks, track their progress, and assess their own performance through self-

assessment rubrics and reflective activities. This process fostered independence and intrinsic motivation, leading to improved academic performance.

Contextualized learning, another essential feature of MC–SLAM, situates lessons in real-life and community-based contexts that students easily relate to. As Berns and Erickson (2001) emphasize, contextual learning increases engagement and understanding by connecting school concepts to authentic experiences. This is particularly relevant in TLE, where students apply theoretical knowledge to practical, skill-based tasks.

The strategic learning component of MC–SLAM complements SDL by helping students develop planning, monitoring, and evaluative strategies—skills identified by Weinstein, Acee, and Jung (2011) as essential for effective lifelong learning. This combination of strategic and self-directed learning helps students adapt to modular instruction, where teacher supervision is reduced, and learners must take ownership of their educational progress.

Furthermore, the increase in posttest scores aligns with Tomlinson's (2014) principle of differentiated instruction, which promotes adapting teaching approaches to address differences in readiness levels, learning preferences, and interests. MC–SLAM integrates flexible pacing, localized content, and personalized feedback, creating a differentiated learning environment that meets diverse learner needs.

These findings also reinforce the Department of Education's (DepEd) advocacy for localized and contextualized learning materials as emphasized in DepEd Order No. 032, s. 2020. This policy underscores the need for instruction that reflects learners' contexts and capacities, promoting relevance, inclusivity, and quality. MC–SLAM effectively operationalized this directive by combining local content, strategic learning, and self-directed learning practices that empowered students to take charge of their educational growth.

Additionally, a higher number of students achieved "Satisfactory" to "Outstanding" performance levels after the intervention, showing that MC–SLAM effectively supported both struggling and high-achieving learners. This dual impact demonstrates its potential as a transformative, scalable, and sustainable instructional model suitable for similar educational settings.

In summary, the findings provide robust evidence that the MC–SLAM intervention significantly enhanced Grade 7 students' TLE academic performance. The large effect size (d = 1.51), significant t-test results, and narrow confidence interval collectively confirm the strong influence of the program. Moreover, the integration of self-directed, strategic, and contextualized learning principles underscores the effectiveness of MC–SLAM in developing not only academic competence but also lifelong learning skills. These results advocate for the wider adoption of MC–SLAM and continued investment in learner-centered, autonomous educational innovations.

5. PLANS FOR DISSEMINATION AND UTILIZATION

The dissemination and utilization of the study *"Fostering TLE Proficiency Through MC–SLAM"* will be implemented through a multi-phase plan to ensure effective awareness, adoption, and sustainability of the intervention across the school and division levels.

Phase1: School-Level Dissemination

The study results will first be presented to school heads, master teachers, and TLE department members through a research colloquium. Key findings—such as the 41% increase in satisfactory to outstanding student performance—will be shared to demonstrate the effectiveness of the *Matatag Curriculum–based Self-Led Autonomous Modules (MC–SLAM)* during the Industrial Arts quarter.

- Success Metrics: 100% TLE teacher participation, dissemination of research briefs, and at least 80% positive feedback from post-presentation evaluations.

Phase 2: Division-Level Dissemination

Findings will be submitted to the Schools Division Office (SDO) as a technical report and proposed for presentation at the Division Research Congress. This aligns with DepEd's Basic Education Research Agenda and supports data-driven instructional improvement.

- Success Metrics: Study inclusion in the Division Research Repository and

endorsement for pilot implementation in at least three additional schools.

Phase 3: Capacity Building through INSET and LAC

The MC–SLAM model will be integrated into In-Service Training (INSET) and Learning Action Cell (LAC) sessions. Teachers will receive training on module design, learner autonomy, contextualization, and formative assessment use.

- Success Metrics: At least 10 TLE teachers trained, two MC–SLAM modules adapted, and 70% teacher satisfaction rate in post-training evaluations.

Phase 4: Feedback and Continuous Improvement

A structured feedback mechanism will ensure ongoing refinement of MC–SLAM. Teachers will complete reflection logs, and students will provide feedback through learning surveys. Results will be reviewed quarterly during LAC sessions to identify improvements.

- Success Metrics: Consistent quarterly reviews and integration of revisions based on feedback data.

Phase 5: Institutionalization

Validated modules and implementation results will be incorporated into the School Improvement Plan (SIP) and Annual Implementation Plan (AIP) for long-term use. Division-level sharing through policy forums and DepEd research platforms will promote wider adoption.

Through this plan, the research aims not only to disseminate results but to institutionalize effective, self-led, and contextualized learning approaches under the Matatag Curriculum, strengthening instructional quality and learner performance in TLE.

6. ACKNOWLEDGMENT

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