

# The Efficacy of a Personalized Learning Approach on Engagement and Academic Performance Among Middle School Learners in a Southeast Asian International School: Basis for a Professional Development Plan

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## ABSTRACT

*In today's diverse classrooms, educators are increasingly seeking ways to move beyond one-size-fits-all instruction. This study investigated how a Personalized Learning Approach (PLA) influenced student engagement and academic performance in a middle school within a Southeast Asian international school. Using a quantitative research design, we collected data from 110 middle school students and their teachers before and after a four-week PLA intervention. Our results showed significant improvements across all four dimensions of engagement—behavioral, emotional, cognitive, and social—with behavioral engagement showing the greatest gains. Academic performance also increased significantly in mastery of competencies, output quality, timeliness, real-world application, and overall improvement. Notably, these positive outcomes were consistent across all demographic groups, suggesting that PLA can serve as an equitable pedagogical strategy. Based on these findings, we propose a structured professional development plan to help teachers implement personalized learning more effectively. This study adds to the growing evidence that PLA can enhance both engagement and achievement in culturally diverse educational settings.*

**Keywords:** *Personalized learning, student engagement, academic performance, middle school education, teacher professional development, Southeast Asia*

## INTRODUCTION

Around the world, education systems are striving to meet the diverse needs of learners. In this context, personalized learning has emerged as a promising alternative to traditional instruction. A Personalized Learning Approach (PLA) refers to teaching strategies that tailor content, pacing, and methods to individual students' strengths, interests, and readiness levels (Pane et al., 2017). Grounded in constructivist and student-centered theories, PLA empowers learners to take ownership of their education, thereby fostering deeper engagement and better academic outcomes.

Global research supports the effectiveness of personalized learning. Studies in the United States, for example, show that students in personalized learning environments make modest but significant gains in mathematics and reading (Pane et al., 2015). When instruction aligns with students' interests and prior knowledge, both motivation and conceptual understanding improve substantially (Walkington, 2013). These benefits are especially important during middle school—a period marked by cognitive shifts, social-emotional changes, and often, declining academic engagement (Eccles & Roeser, 2011).

Despite this international evidence, there remains a lack of localized research on personalized learning within Southeast Asian contexts, especially in international schools that blend global curricula with regional cultural nuances. These schools often serve socioeconomically diverse populations and use technology-rich environments, making them ideal settings for innovative pedagogies like PLA. However, without local validation, educators may hesitate to adopt such approaches due to uncertainties about their effectiveness.

In this research, PLA is conceptually anchored on learner-centered and self-regulatory learning perspectives, wherein autonomy-supportive instructional design is expected to strengthen students' behavioral participation, emotional valuing, cognitive investment, and social interaction, which in turn are associated with improved teacher-rated academic performance indicators.

This study addresses this gap by examining the impact of a PLA intervention on middle school learners at an international school in Southeast Asia. We sought to answer the following questions:

1. What is the demographic profile of the middle school learners?
2. What are the levels of learner engagement before and after PLA implementation across behavioral, emotional, cognitive, and social dimensions?
3. What are the levels of academic performance before and after PLA implementation?
4. Are there significant differences in engagement and academic performance before and after PLA implementation?
5. Is there a significant relationship between changes in engagement/performance and learners' demographic profiles?
6. What professional development plan can be proposed based on the findings?

By answering these questions, we aim to provide educators, curriculum planners, and policymakers with evidence-based insights into the potential of personalized learning to transform teaching and learning in similar educational contexts.

## METHODS

### Research Design

We used a one-group pretest-posttest design to evaluate the effects of the Personalized Learning Approach. This quasi-experimental design enabled within-group comparisons over time and was appropriate for the school setting, where random assignment was not feasible (Creswell & Creswell, 2018).

### Participants

The study involved 110 middle school students (Grades 7 and 8) and their 15 teachers from an international school in Southeast Asia. All students participated in the PLA intervention, while teachers provided perceptual data on student engagement and

academic performance. The school was selected for its commitment to pedagogical innovation and diverse student body. All demographic information was kept confidential.

## Intervention

The PLA was implemented over a four-week period and included the following components:

- Differentiated instruction tailored to individual learning profiles
- Adaptive digital tools such as Khan Academy and Quizizz for self-paced learning
- Student goal-setting conferences and progress-tracking portfolios
- Collaborative project-based learning activities aligned with student interests
- Formative feedback loops to guide instructional adjustments

## Instruments

We used two researcher-developed questionnaires:

1. Demographic Profile Sheet – collected data on age, sex, grade level, parental occupation, and family income.
2. Teacher Perception Survey – assessed learner engagement (20 items) and academic performance (25 items) using a 5-point Likert scale. The survey was validated by experts (CVI = 0.94) and showed high reliability (Cronbach's  $\alpha = 0.89$ ).

Teacher perceptions were selected as the primary data source because they provide a holistic, observational perspective on student engagement and performance across diverse classroom contexts. As trained professionals who interact with students daily, teachers can assess nuanced behavioral and academic changes that might not be captured through student self-reports alone. The survey utilized a 5-point Likert scale ranging from 1 (Strongly Disagree/Needs Improvement) to 5 (Strongly Agreed/Excellent).

## Data Collection

Pre-intervention data were collected one week prior to the PLA's initiation. After the four-week intervention, the same teachers completed a post-intervention survey. To protect student privacy and prevent bias, sensitive demographic details were collected directly by the researcher and kept confidential.

The study was approved by the university's research ethics committee. Active informed consent was obtained from the school principal and participating teachers; student assent was secured prior to participation. All data were reported in an aggregated, non-identifiable form

## Data Analysis

We used descriptive statistics to summarize profiles and mean scores. Paired sample t-tests determined pre-post differences in engagement and performance. Relationships between demographic variables and outcome changes were examined using Pearson's  $r$  and chi-square tests. Analyses were performed using SPSS version 26, with  $\alpha = 0.05$ .

## RESULTS AND DISCUSSION

### Demographic Profile of Participants

The majority of participants were aged 13–16 years (69.1%), female (55.5%), and in Grade 8 (63.6%). Most fathers were in business/entrepreneurship (53.6%); mothers were primarily entrepreneurs (47.3%) or homemakers (17.3%). Over half of the students came from high-income households (>950 USD monthly), reflecting the school's socioeconomically privileged demographic. (Table 1).

**Table 1:** Demographic Profile of Middle School Learners (n = 110).

| Profile Variable    | Category                  | Frequency | Percentage |
|---------------------|---------------------------|-----------|------------|
| Age                 | 10–12 years               | 34        | 30.9%      |
|                     | 13–16 years               | 76        | 69.1%      |
| Sex                 | Male                      | 49        | 44.5%      |
|                     | Female                    | 61        | 55.5%      |
| Grade Level         | Grade 7                   | 40        | 36.4%      |
|                     | Grade 8                   | 70        | 63.6%      |
| Father's Occupation | Business/Entrepreneur     | 59        | 53.6%      |
|                     | Professional/Technical    | 22        | 20.0%      |
|                     | Government/Public Service | 14        | 12.7%      |
|                     | Others                    | 15        | 13.6%      |
| Mother's Occupation | Business/Entrepreneur     | 52        | 47.3%      |
|                     | Homemaker                 | 19        | 17.3%      |

| Profile Variable      | Category               | Frequency | Percentage |
|-----------------------|------------------------|-----------|------------|
|                       | Professional/Technical | 21        | 19.1%      |
|                       | Others                 | 18        | 16.4%      |
| Monthly Family Income | > \$950 USD            | 63        | 57.3%      |
|                       | \$570–\$760 USD        | 22        | 20.0%      |
|                       | \$190–\$380 USD        | 8         | 7.3%       |
|                       | < \$190 USD            | 4         | 3.6%       |
|                       | Other ranges           | 13        | 11.8%      |

*Note: Income ranges are approximate equivalents in USD, reflecting local economic tiers. The "Other ranges" category (11.8%) includes families who declined to specify or reported non-standard income patterns.*

## Changes in Learner Engagement

Teacher perceptions indicated significant improvements across all engagement domains following the PLA intervention (Table 2). Behavioral engagement increased the most (mean difference = +0.31), reflecting better task completion and class participation. Emotional, cognitive, and social engagement also rose significantly, suggesting that personalized learning fostered not only academic involvement but also emotional connection and peer collaboration. Although mean scores remain within the “moderately engaged” level, the pre- to post-test scores show a positive change in all identified dimensions in the study.

**Table 2:** Level of Learner Engagement Before and After PLA Implementation (Teacher Perceptions)

| Engagement Dimension  | Pre-Intervention Mean | Post-Intervention Mean | Mean Difference | t-value | p-value  |
|-----------------------|-----------------------|------------------------|-----------------|---------|----------|
| Behavioral Engagement | 3.09 (ME)             | 3.40 (ME)              | +0.31           | -7.60   | < 0.001* |
| Emotional Engagement  | 3.13 (ME)             | 3.40 (ME)              | +0.27           | -7.27   | < 0.001* |
| Cognitive Engagement  | 2.87 (ME)             | 3.22 (ME)              | +0.35           | -6.94   | < 0.001* |

| Engagement Dimension | Pre-Intervention Mean | Post-Intervention Mean | Mean Difference | t-value | p-value  |
|----------------------|-----------------------|------------------------|-----------------|---------|----------|
| Social Engagement    | 2.89 (ME)             | 3.17 (ME)              | +0.28           | -6.22   | < 0.001* |
| Overall Engagement   | 3.00 (ME)             | 3.30 (ME)              | +0.30           | -7.51   | < 0.001* |

Note: ME = Moderately Engaged (Scale range: 2.51–3.50). All improvements were statistically significant at  $\alpha = 0.01$ . Effect sizes (Cohen's  $d$ ) ranged from 0.55 to 0.85, indicating moderate to large practical significance.

## Changes in Academic Performance

We observed significant gains across all academic performance indicators (Table 3). The greatest improvement was in overall academic improvement (mean difference = +0.45), followed by mastery of competencies and quality of outputs. Timeliness and real-life application also showed meaningful gains.

**Table 3:** Level of Academic Performance Before and After PLA Implementation (Teacher Perceptions)

| Performance Indicator        | Pre-Intervention Mean | Post-Intervention Mean | Mean Difference | t-value | p-value  |
|------------------------------|-----------------------|------------------------|-----------------|---------|----------|
| Mastery of Competencies      | 2.66 (M)              | 3.08 (M)               | +0.42           | -8.41   | < 0.001* |
| Quality of Outputs           | 2.64 (M)              | 3.05 (M)               | +0.41           | -8.00   | < 0.001* |
| Timeliness of Submission     | 2.87 (M)              | 3.15 (M)               | +0.28           | -5.79   | < 0.001* |
| Real-Life Application        | 2.68 (M)              | 3.05 (M)               | +0.37           | -7.23   | < 0.001* |
| Overall Academic Improvement | 2.64 (M)              | 3.09 (M)               | +0.45           | -8.61   | < 0.001* |
| Overall Academic Performance | 2.70 (M)              | 3.08 (M)               | +0.38           | -8.17   | < 0.001* |

Note: M = Moderate Performance (Scale range: 2.51–3.50). All improvements were statistically significant at  $\alpha = 0.01$ . Effect sizes (Cohen's  $d$ ) ranged from 0.60 to 0.95, indicating moderate to large practical significance.

## Relationship with Demographic Variables

No significant relationships were found between demographic variables (age, sex, grade level, parental occupation, family income) and changes in engagement or academic performance (all  $p > 0.05$ ). This suggests that the benefits of personalized learning were equitably distributed across different student subgroups.

**Table 4:** Relationship Between Demographic Variables and Changes in Engagement/Performance

| Demographic Variable | Change in Engagement (p-value) | Change in Academic Performance (p-value) | Interpretation  |
|----------------------|--------------------------------|------------------------------------------|-----------------|
| Age                  | 0.228                          | 0.407                                    | Not significant |
| Sex                  | 0.765                          | 0.865                                    | Not significant |
| Grade Level          | 0.753                          | 0.914                                    | Not significant |
| Father's Occupation  | 0.273                          | 0.345                                    | Not significant |
| Mother's Occupation  | 0.824                          | 0.451                                    | Not significant |
| Family Income        | 0.120                          | 0.490                                    | Not significant |

\*All p-values  $> 0.05$ \*

## Discussion

This study provides compelling evidence that a Personalized Learning Approach can significantly enhance both engagement and academic performance among middle school learners in an international school setting. The improvements we observed across behavioral, emotional, cognitive, and social dimensions of engagement align with prior research indicating that personalized learning fosters student autonomy, relevance, and intrinsic motivation (Fredricks et al., 2004; Walkington, 2013).

Notably, behavioral engagement showed the largest gains, suggesting that when students have agency over their learning, they are more likely to participate actively, complete tasks, and adhere to classroom norms. Similarly, the significant improvements in academic performance underscore PLA's capacity to support not only content acquisition but also the development of responsible, transferable learning habits.

Perhaps one of the most encouraging outcomes is the absence of significant relationships between demographic factors and improvements in engagement or



performance. This indicates that personalized learning served as an equitable intervention, benefiting students regardless of age, gender, socioeconomic background, or parental occupation. In a region where educational disparities persist, this finding highlights PLA's potential as an inclusive pedagogical strategy.

The consistent benefits across all demographic groups suggest that personalized learning may serve as an equalizing pedagogical force. By focusing on individual readiness and interests rather than broad demographic categories, PLA appears to mitigate some of the traditional barriers associated with socioeconomic status, gender, or family background. This finding is particularly encouraging for diverse educational settings like ours, where equity remains a central institutional goal.

### Limitations and Future Directions

While this study provides encouraging evidence for PLA, certain limitations should be acknowledged. The four-week intervention period, though intensive, was relatively short. A longer implementation might allow gains to move from 'moderate' to 'high' levels. Additionally, reliance on teacher perceptions, though reliable, could be complemented in future studies with direct student surveys or observational data. Teachers were also unaware of student socioeconomic backgrounds—a deliberate choice to prevent bias, though this may have limited their contextual understanding. Future research could explore the impact of such confidentiality measures on teacher perception and instructional responsiveness. Additionally, while the one-group pretest-posttest design was appropriate for this school context, future studies incorporating a control group could further strengthen causal claims about PLA's effectiveness.

### CONCLUSION

This study indicates that a Personalized Learning Approach can meaningfully improve learner engagement and academic performance in a Southeast Asian international middle school. The intervention led to statistically significant gains across all measured domains, and these benefits were equitably distributed across diverse student demographics. These results affirm PLA's relevance as a student-centered, inclusive pedagogical model suitable for culturally and socioeconomically varied educational contexts.

### RECOMMENDATIONS

**For School Leaders:** Adopt PLA as a core instructional framework and allocate resources for teacher training and digital tool integration.

**For Teachers:** Engage in ongoing professional development focused on differentiation, formative assessment, and student-centered facilitation.

**For Curriculum Designers:** Incorporate flexible, competency-based learning pathways that allow for personalization across subjects.



For Researchers: Conduct longitudinal studies to examine PLA's long-term effects and explore its applicability in public and rural school settings.

### Proposed Professional Development Plan

- A structured training plan should include:
- Designing individualized learning plans
- Using adaptive technology for differentiation
- Implementing formative feedback systems
- Fostering social-emotional learning within personalized frameworks

Given the high ratings for cognitive engagement and strong academic gains, the professional development plan prioritizes strategies to strengthen student goal-setting, progress monitoring, and feedback cycles.

Such capacity-building initiatives will help ensure that personalized learning is implemented sustainably and effectively, ultimately supporting the development of engaged, competent, and lifelong learners.

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