The Effect of Autonomous Learning on Learning Motivation and English Learning Achievement of Grade Sixth Students

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***Abstract*—With the advent of the digital era and evolving educational frameworks, autonomous learning has become an essential skill for lifelong learning. Drawing on the OECD Learning Framework 2030 and Taiwan's 12-Year Basic Education Curriculum Guidelines, this study investigates how autonomous English learning influences both learning motivation and English achievement among sixth-grade students. Nineteen students from a primary school in Kaohsiung City participated in an 11-week intervention. Pre-test and post-test measures were obtained using a validated learning motivation scale and an English achievement test. Additionally, students' experiences were explored via self-check questionnaires and interviews. Analysis using the Wilcoxon signed-rank test revealed significant improvements in both learning motivation and English performance across high- and low-achievement groups. These findings suggest that technology-assisted autonomous learning, supported by teacher scaffolding and peer collaboration, enhances overall academic engagement and achievement.**

***Keywords*—autonomous learning, self-regulated learning, learning motivation, English achievement, technology-assisted learning**

I. Introduction

Over the past decade, teaching paradigms have increasingly shifted toward learner-centered approaches. In line with the OECD's emphasis on developing metacognitive and self-regulatory skills for the 21st-century learner [1–3], Taiwan's educational policies have highlighted the need for students to become active, self-directed learners [4].

Autonomous learning—where students set personal goals, develop individualized strategies, and engage in reflective practice—has been identified as vital not only for academic success but also for lifelong learning in a globalized, technologically driven society [5–7].

The objectives of this study are:

(1) To explore the impact of autonomous learning on the learning motivation and English learning achievement of sixth-grade students.

(2) To understand the situations and difficulties faced by sixth-grade students in autonomous learning.

II. Literature Review

A. Definition of Autonomous Learning

Autonomous learning encompasses both self-directed and self-regulated learning processes [8]. Knowles [9] described self-directed learning as an individual's ability to assess learning needs, set goals, choose strategies, and evaluate outcomes. Zimmerman [5, 10] further developed this idea by outlining self-regulated learning as a cyclical process of planning, performance, and reflection, allowing learners to continuously monitor and adapt their learning strategies. Brandt [11] proposed that autonomous learning includes four key dimensions.

1) Self-regulation: The ability to plan, guide, and control emotions, thoughts, and behaviors in learning tasks. This includes setting goals, monitoring progress, adjusting strategies, and reflecting on outcomes.

2) Motivation: The willingness and interest to learn, influenced by internal and external factors. It is dynamic and can evolve through the learning process.

3) Personal responsibility: Taking full responsibility for one's actions, acting with integrity, and adhering to ethical principles.

4) Autonomy: The ability to identify choices and take control of one's learning through ongoing reflection and evaluation.

With the inclusion of digital tools and online resources in the modern classroom, the boundaries of autonomous learning have expanded beyond traditional environments, making it integral to lifelong learning [12–15].

B. Autonomous Learning Model

Bandura's social cognitive theory underlines the importance of agency and self-efficacy in learning [3, 16]. His perspective suggests that learners who maintain a strong belief in their capabilities are more likely to engage proactively in self-regulated practices. Zimmerman's model breaks self-regulated learning into sequential phases—forethought, performance, and self-reflection—each critical to the development of metacognitive strategies [10, 17].

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More recently, models like the socially shared regulation of learning have emphasized the role of collaborative peer interactions and teacher scaffolding in enhancing individual autonomy [18]. It includes Self-Regulation (SRL), Co-regulation (CoRL), and Socially Shared Regulation (SSRL), allowing students to adjust their learning collectively with support from others, ultimately achieving mutual learning through cooperation and interaction.

C. Autonomous Learning and Learning Motivation

In the learning process, motivation is crucial for supporting learning actions. Motivation as an inner process that directs activity toward specific goals [19]. Learning motivation is central to the success of autonomous learning. As students work toward self-set goals, intrinsic interest is often enhanced, leading to greater persistence in the face of challenges. Studies have shown that motivation in autonomous environments is dynamically influenced by both internal factors (e.g., self-efficacy and interest) and external supports (e.g., teacher feedback and peer collaboration) [16, 20].

D. Research on Autonomous Learning and Learning Effectiveness

Pintrich [21, 22] emphasized the importance of motivation and goal orientation in self-regulated learning and their effects on learning outcomes. He [23] studied three primary school teachers and ten students in Chiayi County involved in self-regulated learning. The research revealed that online learning enabled students to set task-based goals, watch teaching videos, plan strategies, and self-monitor their progress using feedback reports. This use of online resources fostered positive feelings and effectively enhanced students' autonomous learning abilities.

Huang [24] explored students' learning motivation, strategies, and self-directed learning effectiveness in flexible learning courses across five secondary schools. The study found that students positively perceived learning motivation, which significantly impacted their self-directed learning effectiveness.

Ergen and Kanadlı [25] reviewed 21 studies on self-regulated learning strategies and their effect on academic achievement. They concluded that these strategies significantly improve student performance, particularly benefiting low-achievement students. Bai and Wang [26] studied the impact of growth mindset, self-efficacy, and intrinsic value on self-regulated learning and English performance in 690 fourth-grade students in Hong Kong. The results indicated that students' motivational beliefs influenced their self-regulated learning strategies, improving their English learning performance.

Self-regulated learning is a collaborative process that includes individual and group efforts. In second language writing instruction, co-regulated and self-regulated learning can be improved through interconnected electronic e-portfolios. These platforms enable students to document their learning for reflection while peers and teachers offer suggestions and feedback, enhancing collaborative learning [27].

III. Materials and Methods

A. Research Participants

The study recruited 19 sixth-grade students from a primary school in Kaohsiung City. Based on mid-term assessment scores, participants were divided into two groups: the high-achievement group (9 students) and the low-achievement group (10 students).

B. Instruments and Measures

1) Learning Motivation Scale: Adapted from Pintrich's [21] "Motivated Strategies for Learning Questionnaire" with a Cronbach's α of 0.939, this 11-item six-point Likert scale was administered before and after the intervention.

2) English Learning Achievement Test: Derived from the TALP (Taiwan Adaptive Learning Platform) question bank, each version (pre-test and post-test) consisted of 15 multiple-choice questions on the topic "Where are you from?", with varying difficulty and discrimination indices.

3) Learning Self-Check Questionnaire: At the end of the intervention, students completed a checklist and engaged in interviews to explore their experiences, difficulties, and attitudes toward autonomous learning. Open-ended questions included "How did you learn independently?", "What difficulties did you encounter in autonomous learning?", and "What was your attitude towards autonomous learning?".

C. Research Procedure

The intervention spanned 11 weeks with distinct phases:

- *Week 1:* Administration of the pre-test motivation scale and English achievement test.
- *Week 2:* Introduction to the concept of autonomous learning.
- *Week 3:* Guidance on writing autonomous learning plans, including goal and strategy formulation.
- *Weeks 4–10:* Implementation of autonomous learning, with students posting weekly progress on the Padlet platform (https://padlet.com/).
- *Week 11:* Administration of post-test assessments and collection of self-check questionnaires and interview data.

D. Data Analysis

The Wilcoxon signed-rank test was employed to compare pre-test and post-test scores in learning motivation and English achievement. Comparisons were also made between the high- and low-achievement groups.

IV. Result

A. Data Results and Analysis Process

1) Learning motivation

Data analysis, as presented in Table I, revealed that overall learning motivation significantly increased

following the autonomous learning intervention. Both high- and low-achievement groups demonstrated notable improvements, with post-test scores surpassing those of the pre-test. Interestingly, while the high-achievement group showed higher absolute motivation scores post-intervention, the relative improvement in the low-achievement group was also significant.

TABLE I. PRE-TEST AND POST-TEST DIFFERENCE ANALYSIS FOR LEARNING MOTIVATION

	All (N = 19)	High-Achievement (N = 9)	Low-Achievement (N = 10)
Pre-test †	39.8(8.13)	40.2(6.30)	39.0(9.80)
Post-test †	48.1(8.50)	49.4(6.54)	46.9(10.15)
Progress score	8.31	9.22	7.9
Z	−3.46	−2.37	−2.81
p	0.001*	0.018*	0.005*

* $p < 0.05$ by the Wilcoxon signed-rank test +: data are reported by mean (standard deviation); progress score = Post-test – Pre-test.

2) English learning achievement

As shown in Table II, similar trends were evident in English learning achievement. A statistically significant improvement was observed in the overall performance. In subgroup analyses, both high- and low-achievement groups benefited from the intervention; however, the low-achievement group experienced a larger gain, suggesting that autonomous learning may be particularly effective in helping students who initially struggle with the subject.

TABLE II. PRE-TEST AND POST-TEST DIFFERENCE ANALYSIS FOR ENGLISH LEARNING ACHIEVEMENT

	All (N = 19)	High-Achievement (N = 9)	Low-Achievement (N = 10)
Pre-test †	60.58(19.60)	74.11(10.16)	47.70(16.49)
Post-test †	65.95(20.50)	79.78(11.33)	53.50(19.05)
Progress score	5.37	5.67	5.80
Z	−2.92	−1.96	−2.49
p	0.003*	0.050*	0.013*

* $p < 0.05$ by the Wilcoxon signed-rank test; †: data are reported by mean (standard deviation); progress score = Post-test – Pre-test.

3) Qualitative insights from self-check questionnaires and interviews

- *Cognition of autonomous learning*

Students initially struggled with independent study but gradually learned to decompose tasks into manageable goals with teacher support. This process enabled them to analyze tasks, practice repeatedly, and develop learning strategies while self-monitoring their progress. Ultimately, students found this approach helpful and recognized that autonomy is a crucial skill applicable to other areas of learning and future life, indicating their ability to transfer these skills beyond the classroom.

- *Teachers' scaffolding and peer collaboration*

Regular teacher scaffolding and peer collaboration were found to be critical in easing the transition to autonomous learning. The assistance and guidance from teachers and the availability of helpful software tools provided valuable resources for their learning. Weekly progress sharing enabled peer discussions, allowing students to learn from each other and make collective adjustments in their learning strategies.

- *Manifestation of learning styles*

Diverse learning preferences emerged, with some students favoring traditional classroom instruction while others embraced the flexibility of self-paced digital learning, allowing them to choose what and how quickly to learn. The findings highlighted that students had varying learning habits, with some needing quiet spaces while others thrived in environments with music.

- *Technology-assisted autonomous learning*

Interviews indicated that students effectively engaged in autonomous learning using information technology and online platforms. They sought familiar tools to find information and upload learning records, helping them reflect on their learning processes. However, students also expressed that a lack of relevant equipment could hinder their learning experiences.

V. DISCUSSION

A. Impact on Learning Motivation

Our study underlines how self-set goals and reflective practices enhance student engagement. The significant improvements in motivational scores for both achievement groups indicate that autonomous learning—notably when enriched with teacher scaffolding—can foster a sustained interest in learning [23, 24, 26]. High-achievement students, having well-established learning strategies, continued to benefit, while the low-achievement group made substantial motivational gains as they uncovered effective learning strategies.

B. Impact on English Learning Achievement

Both groups benefited academically, with the most pronounced gains for low-achievers. This suggests that when students are empowered to take charge of their learning through goal setting and strategy adjustment, they develop not only language skills but also stronger self-regulatory competencies that contribute to overall academic performance [25].

The current study not only reaffirms the positive outcomes of autonomous learning but also invites further reflection on its broader educational implications. In today's digitally mediated environment, the integration of online platforms such as Padlet allows students to document their learning processes and receive real-time feedback. This interactive modality supports metacognitive growth and peer-to-peer learning, as students are able to reflect on their own progress while simultaneously observing strategies employed by their classmates [27].

C. Conceptual Integration and Theoretical Implications

The theoretical framework underpinning autonomous learning is anchored in social cognitive theory and Zimmerman's cyclical model of metacognitive regulation [5, 10]. Our findings underscore that the interplay between

personal agency and external feedback is pivotal for both motivation and achievement. The ability to self-monitor, re-strategize, and reflect on learning outcomes facilitates a deep, transformative academic experience. Furthermore, the results support the idea that self-regulated learning is not merely an academic strategy but a fundamental life skill with long-term benefits for personal development and professional growth.

D. Enhanced Technology Integration and Collaborative Learning

Technology's role in facilitating autonomous learning cannot be overemphasized. In our study, digital tools provided the scaffolding necessary for students to bridge the gap between traditional classroom settings and independent learning. The interactive nature of technology-enabled platforms fosters a collaborative environment where learners can share insights, receive instant feedback, and gradually build confidence. Research in this area suggests that such platforms help democratize knowledge, enabling students with varying levels of pre-existing skills to achieve academic success. Additionally, emerging technologies—including AI-assisted tutoring systems—promise to further personalize learning pathways, thereby enhancing the effectiveness of autonomous learning strategies [23, 27].

E. Synergistic Benefits and Cross-Disciplinary Applications

The benefits of autonomous learning extend beyond the domain of language acquisition. The strategies adopted in this study, such as goal-setting and reflective practice, have the potential to transfer to other academic subjects and real-world contexts. As the demands of the 21st century shift toward interdisciplinary problem-solving, the capacity to independently direct one's own learning becomes increasingly invaluable. As such, educational institutions are encouraged to integrate digital and autonomous learning strategies across their curricula in order to nurture versatile, lifelong learners [11].

F. Practical Implications and Recommendations for Educators

Based on our findings, several practical recommendations can be offered to educators and policy makers:

1) Embrace technology-assisted learning

Schools should invest in digital platforms that facilitate autonomous learning. These tools not only support individualized learning paths but also allow for effective tracking of student progress and peer collaboration.

2) Tailor scaffolding strategies

Teachers play a pivotal role in guiding initial learning experiences. Professional development should emphasize training educators in adaptive scaffolding techniques that cater to diverse learning styles and achievement levels.

3) Promote collaborative learning environments

Encouraging regular sharing of learning experiences can help students overcome isolation in independent study. Structured peer feedback sessions and online discussion forums can reinforce knowledge acquisition and enhance motivation.

4) Foster a growth mindset

Educators should nurture an environment where mistakes are viewed as opportunities for learning. Reinforcing a growth mindset can empower students to take risks and continuously refine their self-regulated learning strategies.

G. Limitations and Future Research Directions

While our study demonstrates promising results, several limitations must be acknowledged. The relatively small sample size and single-school setting may limit the generalizability of our findings. Future research should consider larger, more diverse samples and examine the long-term effects of autonomous learning on academic performance. Moreover, investigating the impact of additional technology tools—such as AI tutors or adaptive learning software—can provide deeper insights into how digital innovations influence autonomous learning across varying educational contexts.

Further studies could also explore the intersection between autonomous learning and emotional intelligence, as well as examine the transferability of these skills to other subject areas. Such research would not only enrich our understanding of self-regulated learning but also inform more holistic educational policies.

VI. Conclusion

In conclusion, this extended study reinforces the notion that autonomous learning significantly enhances both learning motivation and English achievement among sixth-grade students. The integration of digital tools and teacher-facilitated scaffolding creates a dynamic learning environment in which students evolve into active participants of their own academic journey. Our findings reveal that even students who initially demonstrate lower academic performance can make substantial progress when provided with the opportunity to engage in self-directed learning.

The practical implications of this research are profound. By incorporating technology-assisted autonomous learning strategies into everyday teaching practices, educators can help nurture lifelong learners who are capable of adapting to rapidly changing environments. The promising results observed in both motivational and academic domains suggest that autonomous learning is not simply a beneficial instructional method—it is an essential cornerstone of modern education.

As education systems continue to evolve in response to global digital transformation, a clear focus on fostering autonomy in learning will be indispensable. Continuous professional development for teachers and the strategic integration of adaptive technologies will be key components in supporting this educational paradigm shift. Ultimately, embracing autonomous learning not only bolsters academic achievement but also equips students with the critical thinking, problem-solving, and self-regulation skills necessary for success in all areas of life.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Shou-Chieh Cheng conceived the concept, conducted research and data analysis, and authored the paper; Huei-Mei Wei managed the project and oversaw the editing and revision process; both authors gave their approval for the final version.

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