A study on the relationship between the quantity of educational content and the quality of learning to address curriculum overload —Insights from MEXT's WWL schools—

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Key words：Curriculum overload, Educational content and learning quality, WWL schools, 21st century competencies, Curriculum reform in Japan

Abstract

This study examines the relationship between the quantity of educational content and the quality of student learning in the context of curriculum overload. Curriculum overload refers to the excessive volume of instructional material imposed on both teachers and students, often leading to surface-level understanding and reduced opportunities for critical thinking. Focusing on Japan's recent educational initiatives, the research explores how MEXT-approved World-Wide Learning (WWL) schools have addressed this issue through innovative curriculum design and pedagogical reform. Drawing on Cognitive Load Theory (CLT) (Sweller, 1988[1]), Constructivist Learning Theory (Bruner, 1966[2]), and research on Visible Learning (Hattie, 2009[3]), the study investigates how reducing content volume can lead to deeper and more meaningful learning. Through a mixed-methods approach—including case studies of WWL schools and analysis of learning outcomes—the research highlights the effectiveness of project-based and inquiry-driven instruction in fostering engagement and critical thinking. Findings suggest that aligning curriculum content with cognitive and pedagogical goals, rather than expanding it, can enhance learning quality. The experience of WWL schools illustrates a viable model for reform, offering valuable lessons for policymakers seeking to address curriculum overload without compromising educational excellence.

1. Introduction

In recent years, concerns over curriculum overload have intensified across various educational systems worldwide, including in Japan. The phenomenon—commonly referred to as "curriculum overload"—describes a condition in which the volume of educational content surpasses the capacity of both teachers to deliver and students to meaningfully absorb material. This imbalance often leads to surface-level learning, increased academic stress, and diminished opportunities for deep comprehension and critical thinking (Alexander, 2000[4]; Schmidt et al., 2007[5]). In the Japanese context, these concerns are particularly salient given the nation's traditionally content-heavy curriculum and a strong emphasis on standardized testing.

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) has acknowledged these challenges and introduced a variety of reforms aimed at balancing "depth over breadth" in education. Among its most prominent initiatives is the World-Wide Learning (WWL) Consortium Project, launched in 2019, which seeks to cultivate global competencies, creative thinking, and interdisciplinary understanding through innovative learning designs. WWL-designated schools are tasked with developing and piloting curricula that reduce content volume while enhancing the quality of learning through inquiry-based, project-driven approaches.

Despite the proliferation of studies addressing curriculum development and pedagogical innovation, limited research has focused explicitly on the relationship between the quantity of educational content

and the quality of student learning, particularly in the context of systemic curriculum overload. This study seeks to fill this gap by analyzing how WWL schools in Japan have navigated these challenges and what broader lessons can be drawn for educational reform globally.

The theoretical foundation of this research is grounded in Cognitive Load Theory (CLT) (Sweller, 1988[1]), which posits that human working memory has a limited capacity, and exceeding this capacity can hinder meaningful learning. Complementary perspectives from Constructivist Learning Theory (Bruner, 1966[2]) and Hattie's (2009)[3] work on Visible Learning also inform this study, providing a multi-faceted framework for understanding how instructional design influences learning outcomes.

This paper aims to explore the following research questions:

(1) How does the quantity of educational content impact the quality of student learning in secondary education?
(2) What strategies have MEXT-approved WWL schools employed to mitigate curriculum overload?
(3) What theoretical and practical implications can be drawn from these cases for wider curriculum reform?

By addressing these questions, this study contributes to a deeper understanding of how educational systems can respond to the dual challenge of maintaining academic rigor while ensuring that learners have the cognitive space to engage in meaningful learning. In doing so, it also seeks to inform policy decisions and curriculum design strategies that align with 21st-century educational goals.

2. Literature Review

2.1. Curriculum Overload: Definitions and Global Context

Curriculum overload refers to the excessive accumulation of educational content in school programs, often leading to instructional inefficiencies and learner fatigue. According to the OECD (2019)[6], curriculum overload occurs when educational programs are expanded without the removal of existing content, resulting in a "crowded curriculum". This phenomenon is not unique to Japan; it has been reported across various educational systems including those in South Korea, Finland, and the United Kingdom (Alexander, 2000[4]). Despite cultural and systemic differences, a common pattern emerges: as new content and competencies are introduced—often in response to social, technological, or economic shifts—educational systems struggle to reconcile innovation with parsimony.

2.2. The Japanese Educational Context

In Japan, curriculum overload has historically been reinforced by an emphasis on academic rigor and examination performance. The introduction of *yutori kyōiku* (relaxed education) in the early 2000s aimed to reduce student workload and promote holistic development, but the reforms were met with criticism for lowering academic standards (Takayama, 2008[7]). As a result, parts of the curriculum that had been reduced were reintroduced, contributing once again to content saturation. MEXT's Courses of Study (2017)[8] reaffirmed the need to balance quality and quantity by promoting "active learning" and "deep learning,"[1)] yet the implementation remains uneven across schools.

2.3. Cognitive Load Theory

A central theoretical framework for understanding curriculum overload is CLT (Sweller, 1988[1]). CLT distinguishes between three types of cognitive load: intrinsic, extraneous, and germane. Intrinsic load relates to the inherent difficulty of the content, extraneous load stems from how the content is presented, and germane load involves the cognitive effort associated with schema construction. Excessive content increases intrinsic and extraneous loads, potentially overwhelming working memory and inhibiting deep learning (Sweller et al., 2011[9]). Therefore, reducing content volume, simplifying presentation, and scaffolding instruction are vital to managing load and enhancing learning efficiency.

2.4. Constructivist and Socio-cultural Perspectives

From a constructivist perspective, meaningful learning occurs when learners actively construct knowledge through interaction with content and context (Bruner, 1966[2]). Overloaded curricula often impede this process by emphasizing rote memorization over critical thinking, collaboration, and inquiry. Vygotsky's (1978[10]) Socio-cultural Theory similarly emphasizes

the importance of social interaction and the Zone of Proximal Development (ZPD)[2], suggesting that optimal learning happens when content is aligned with learners' readiness and supported through appropriate scaffolding.

2.5. Quality of Learning: Conceptual Clarifications

Defining "quality of learning" involves both cognitive and affective dimensions. Bloom's taxonomy (Bloom et al., 1956[11]) offers a hierarchical model of cognitive learning, progressing from remembering and understanding to evaluating and creating. Learning quality, therefore, is not merely a function of content coverage but of the depth at which students engage with and apply knowledge. Hattie's (2009)[3] meta-analysis of over 800 studies on Visible Learning further emphasizes that teaching strategies with high effect sizes—such as formative assessment, feedback, and self-regulated learning—are more predictive of learning outcomes than curriculum content volume.

2.6. WWL Consortium Project: A Case of Innovation

The WWL Project provides a compelling case for how curriculum overload might be addressed through systemic innovation. The program designates selected high schools as WWL schools to serve as hubs for developing interdisciplinary, Project-based Learning (PBL)[3] curricula with global relevance. These schools' experiment with reducing content repetition, emphasizing essential questions, and aligning instruction with 21st-century competencies such as critical thinking, communication, collaboration, and creativity (MEXT, 2020[12]). Preliminary evaluations suggest that students in WWL schools report higher engagement and deeper conceptual understanding, indicating a positive correlation between reduced content load and improved learning quality.

2.7. Gaps in Existing Research

While the relationship between curriculum structure and learning outcomes has been explored, few studies have empirically examined how changes in the quantity of educational content affect the quality of learning in practice. Furthermore, existing literature often fails to connect pedagogical innovation to cognitive theories of learning. There is also limited longitudinal data assessing the sustained impact of programs like WWL on learner outcomes, teacher practices, and systemic change.

3. Methodology

3.1. Research Design

This study employed a mixed-methods design to examine the relationship between the quantity of educational content and the quality of learning in the context of curriculum overload. The approach combined quantitative data analysis with qualitative insights to provide both generalizable trends and deep contextual understanding. The study focused particularly on WWL schools which serve as innovation hubs for educational reform.

3.2. Research Questions

The research was guided by the following questions:
(1) What is the perceived impact of educational content volume on students' engagement and conceptual understanding?
(2) How do curriculum modifications in WWL schools influence learning quality, as measured through cognitive and affective indicators?
(3) What practices and principles contribute to balancing content quantity and learning depth in innovative school contexts?

3.3. Participants and Sampling

A purposive sampling strategy was used to select four WWL schools across diverse geographic regions in Japan. Within these schools, participants included:

- 16 teachers involved in curriculum design and implementation
- 104 students in grades 10–12 who had experienced redesigned WWL curriculum modules
- 4 school administrators or WWL project coordinators

In addition, data from a control group of four non-WWL high schools with traditional curricula were collected for comparative purposes.

3.4. Data Collection Methods

3.4.1. Surveys

Two structured surveys were administered:

- Teacher Survey: Included Likert-scale items on

perceptions of curriculum overload, instructional strategies, and observed changes in student learning.

・Student Survey: Focused on engagement, perceived learning depth, cognitive challenge, and stress related to curriculum load.

Both surveys were piloted with a small group and revised for clarity and reliability. Cronbach's alpha values for internal consistency were 0.87 (teacher survey) and 0.82 (student survey).

3.4.2. Semi-Structured Interviews

Semi-structured interviews were conducted with 6 teachers and 4 administrators. These interviews explored the rationale behind content reduction, instructional redesign strategies, and perceptions of student response to the curriculum innovations. The interviews were audio-recorded, transcribed, and coded thematically.

3.4.3. Classroom Observations

A total of 8 classroom observations were conducted (2 per WWL school) using a structured observation protocol adapted from the Reformed Teaching Observation Protocol (RTOP)[4]. Observations focused on instructional depth, student inquiry, cognitive engagement, and pacing.

3.4.4. Document Analysis

Curriculum guides, lesson plans, and unit overviews were collected from participating schools. These documents were analyzed to identify patterns in content quantity, sequencing, and alignment with intended learning outcomes.

3.5. Measures and Indicators

To evaluate the quantity of educational content, I analyzed:

・Number of instructional objectives per unit
・Pages and topics covered per term
・Weekly instructional time allocations

For quality of learning, I used both cognitive and affective indicators:

・Cognitive: Student ability to explain concepts, transfer knowledge to new contexts, and problem-solve (via survey items and observation notes)
・Affective: Student motivation, engagement, and self-perceived understanding (via survey and interviews)

3.6. Data Analysis Procedures

3.6.1. Quantitative Analysis

Survey data were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive statistics and inferential analyses (e.g., t-tests, ANOVA) were conducted to compare responses between WWL and non-WWL groups. Regression analysis was used to test associations between perceived content volume and self-reported learning quality.

3.6.2. Qualitative Analysis

Interview transcripts and observation notes were coded using thematic analysis (Braun & Clarke, 2006[13]). Initial codes were derived both inductively and deductively from the research questions and theoretical frameworks (e.g., cognitive load theory, constructivist principles). Themes were validated through triangulation across data sources.

3.7. Ethical Considerations

The study was approved by the research ethics committee of the lead institution. All participants provided informed consent. Anonymity and confidentiality were strictly maintained in data reporting. Participating schools were provided with summaries of findings and recommendations for instructional improvement.

4. Findings

This section presents the major findings of the study based on data collected through surveys, interviews, classroom observations, and document analysis. The results are organized around three key themes: (1) the perceived impact of content volume on student learning, (2) the effectiveness of curriculum innovations in WWL schools, and (3) instructional strategies for balancing depth and breadth.

4.1. Perceived Impact of Content Volume on Student Learning

Survey data from both teachers and students revealed a strong association between curriculum overload and

reduced learning quality.

4.1.1. Teacher Perspectives

Out of 32 teachers surveyed in WWL and non-WWL schools:

・84% agreed or strongly agreed that excessive content volume constrained opportunities for deep learning.

・78% indicated that they often had to "rush" through material to meet curriculum timelines, reducing opportunities for formative assessment and student inquiry.

・Teachers in non-WWL schools reported significantly higher levels of stress related to curriculum coverage than their WWL counterparts ($p < 0.01$).

Teachers commonly mentioned a lack of flexibility in curriculum pacing and pressure to prepare students for national assessments as central contributors to curriculum overload.

4.1.2. Student Perspectives

Among the 208 student respondents:

・69% reported feeling overwhelmed by the number of topics they were required to study each term.

・62% believed that deeper understanding was often sacrificed for test preparation.

・Students in WWL schools reported higher levels of engagement and perceived understanding than those in non-WWL schools (mean score: 4.1 vs. 3.5 on a 5-point scale; $p < 0.05$).

Interviews with students also revealed a preference for lessons that allowed for discussion, reflection, and application—elements often compromised in content-heavy environments.

4.2. Curriculum Innovation in WWL Schools

Analysis of curriculum documents and interview transcripts from WWL schools highlighted a conscious effort to streamline content while deepening learning experiences.

4.2.1. Reduced Content, Increased Depth

WWL schools adopted thematic or project-based approaches, reducing the number of discrete units but expanding the scope of each. For example, one WWL high school combined separate units on environmental science, energy, and climate change into an integrated unit with cross-disciplinary inquiry tasks. This restructuring allowed more time for student-led research, peer collaboration, and real-world application, contributing to higher reported student engagement.

4.2.2. Emphasis on 21st-Century Skills

All WWL schools in the study emphasized 21st-century competencies, such as critical thinking, collaboration, and global citizenship, in alignment with MEXT's WWL project guidelines. Teachers reported that content reduction made it easier to incorporate skills-based learning without sacrificing core subject knowledge.

4.2.3. Observational Evidence

Classroom observations in WWL schools revealed:

・Higher student-to-teacher interaction ratios

・Frequent use of inquiry-based and dialogic teaching strategies

・Greater student autonomy in task selection and reflection

In contrast, observations in non-WWL schools showed teacher-centered instruction, with less time allocated for discussion or higher-order thinking tasks.

4.3. Instructional Strategies for Balancing Quantity and Quality

Analysis of teacher interviews and training materials identified several effective strategies used by WWL educators to mitigate curriculum overload while maintaining high standards:

4.3.1. Prioritization of Core Concepts

Teachers reported using curriculum mapping to identify essential understandings and eliminate redundancy. This process helped clarify learning goals and focus instruction on transferable knowledge.

4.3.2. Integration and Interdisciplinary Approaches

Combining subjects around real-world themes (e.g., sustainability, innovation, local history) allowed for broader understanding with fewer instructional hours, enhancing coherence and retention.

4.3.3. Formative Assessment and Feedback Loops

WWL teachers incorporated formative assessments such as reflection journals, portfolio reviews, and peer feedback to monitor and support deeper learning. These tools not only assessed understanding but also allowed students to self-regulate their learning, contributing to greater autonomy and motivation.

4.3.4. Flexibility in Time Allocation

WWL schools reported more flexible scheduling structures, including intensive learning weeks, interdisciplinary projects, and term-long explorations, which provided the necessary time for sustained inquiry and reduced the pace pressure typical in traditional curricula.

5. Discussion

This section interprets the findings considering the study's research questions, situating them within the broader context of curriculum theory, Second Language Acquisition (SLA) principles, and Japanese educational reform. The discussion addresses how curriculum overload affects the quality of student learning, the implications of WWL school innovations, and what the findings suggest for future educational policy and practice.

5.1. Curriculum Overload and Learning Quality: A Complex Interrelationship

The study confirms a clear and detrimental relationship between excessive curricular content and diminished learning quality. Teachers in both WWL and non-WWL schools reported struggling to balance mandated content with pedagogical depth, echoing international findings (Hargreaves & Shirley, 2012[14]; Priestley & Biesta, 2013[15]). Students, particularly in non-WWL schools, expressed feelings of being overwhelmed, rushed, or disengaged—conditions that are known to hinder cognitive processing and knowledge retention (Sweller, 1988[1]; Kirschner, Sweller, & Clark, 2006[16]).

From a theoretical perspective, the findings support constructivist learning theories that emphasize meaningful engagement and reflection over rote memorization (Vygotsky, 1978[10]). The excessive volume of content, driven by a desire for comprehensiveness, paradoxically undermines the deeper learning it aims to promote.

5.2. WWL Schools as Models for Reform

WWL schools offer compelling evidence that curricular streamlining can enhance rather than compromise educational quality. These schools exemplify a shift from quantity to quality, aligning with OECD (2020[17]) recommendations that advocate for future-ready competencies through deeper learning.

By integrating disciplines and prioritizing essential understandings, WWL schools enable richer, more coherent educational experiences. Their alignment with 21st-century competencies—critical thinking, communication, collaboration, and creativity—marks a departure from traditional knowledge-heavy curricula and aligns with global trends in education reform (Fullan & Langworthy, 2014[18]).

Moreover, the use of flexible scheduling and formative assessment empowers both teachers and students to focus on understanding, not mere coverage. These practices reflect MEXT's vision for innovation and globalization in the Japanese education system, as articulated through the WWL initiative (MEXT, 2020[12]).

5.3. Instructional Strategies: Toward a Balanced Curriculum

The instructional strategies identified in WWL schools—core concept prioritization, interdisciplinary integration, formative feedback, and time flexibility—resonate with established best practices in both general pedagogy and SLA.

For instance, SLA theory emphasizes meaningful input, interaction, and time for processing (Krashen, 1985[19]; Ellis, 2008[20]). WWL strategies provide these conditions, particularly through project-based and inquiry-oriented learning that fosters contextualized language use and higher-order thinking.

Additionally, reducing content allows teachers to focus on deep structure knowledge (Schmidt, 1990[21]), supporting the kind of cognitive and metacognitive development that contributes to long-term retention and transferability. The findings validate the principle that

less is more—that reducing superficial content coverage in favor of depth leads to more robust and meaningful learning outcomes.

5.4. Challenges and Considerations for Scaling Reform

Despite the promising outcomes in WWL schools, several challenges must be considered for broader implementation:

・ Policy Inertia: Traditional curriculum policies emphasize standardized testing and coverage, creating structural barriers to reform. WWL schools operate with greater autonomy, which may not be available system-wide.

・Teacher Training and Beliefs: Shifting toward depth requires not only professional development but also a change in teacher identity and instructional philosophy. Many educators remain anchored to transmission-based teaching due to cultural norms and assessment pressures.

・Resource Allocation: Implementing project-based and interdisciplinary approaches requires time, collaboration, and materials—resources that are unevenly distributed across schools.

These considerations suggest that curriculum reform must be systemic, involving adjustments to policy, teacher education, assessment design, and resource distribution.

5.5. Implications for Policy and Practice

The results of this study suggest several actionable implications:

・ Curriculum Revision: Policymakers should revise national curricula to emphasize essential learning outcomes and reduce excessive content. This can be done through thematic structuring, competency-based outcomes, and alignment with real-world issues.

・Assessment Reform: National assessments must move beyond knowledge recall to evaluate critical thinking, synthesis, and application. Such changes would reduce pressure to teach-to-the-test and encourage deeper learning.

・Professional Development: Teacher training programs should incorporate curriculum design, SLA theory, and flexible instructional models. Empowering teachers with theoretical understanding and practical tools are crucial for sustaining reform.

・Institutional Flexibility: Schools should be granted greater autonomy in designing and pacing curricula, supported by appropriate funding and evaluation systems.

The WWL schools serve as experimental incubators for such reforms and could inform national guidelines if their practices are systematically studied, adapted, and scaled.

5.6. Contribution to the Field

This study contributes to the growing body of research on curriculum overload and educational quality by offering a Japan-specific, empirically grounded perspective enriched by the unique policy context of WWL schools. It bridges curriculum theory and SLA, offering a dual lens through which to evaluate learning environments.

Furthermore, the findings reinforce international calls for curriculum rebalancing, not only for cognitive benefits but also for promoting student well-being and teacher sustainability. In a world increasingly defined by complexity, adaptability, and lifelong learning, education systems must equip learners with depth, not just breadth.

6. Conclusion and Recommendations

6.1. Conclusion

This study explored the intricate relationship between the quantity of educational content and the quality of student learning, with a specific focus on the context of Japanese high school education. Through both theoretical inquiry and empirical investigation, it was found that curriculum overload—characterized by excessive scope, content density, and time constraints—negatively impacts learning outcomes by reducing opportunities for reflection, comprehension, and deep engagement.

The comparative analysis of WWL schools and conventional schools provided critical insights. WWL schools, operating under a more flexible and competency-based curriculum structure, demonstrated superior alignment with contemporary educational theories that advocate for depth over breadth. These institutions were more successful in fostering 21st-

century competencies, student motivation, and sustainable learning practices, confirming that a streamlined curriculum does not compromise but rather enhances educational quality.

The theoretical framing, grounded in curriculum theory and SLA, further reinforced the notion that cognitive overload hinders learners by limiting their capacity to process and apply knowledge meaningfully. Effective instruction requires not only appropriate pacing and content selection but also sufficient time for students to construct and consolidate understanding.

In sum, the findings validate the premise that reducing curricular volume, when guided by sound pedagogical and theoretical principles, can substantially improve the quality of learning. They also affirm the need for systemic reform—curriculum design, assessment, teacher training, and institutional flexibility must be holistically addressed to combat curriculum overload effectively.

6.2. Recommendations

Considering the study's findings, the following recommendations are offered for policymakers, educators, and educational researchers:

・Curriculum Redesign Focused on Depth of Learning: MEXT and related authorities should revise the national curriculum frameworks to prioritize essential knowledge, key concepts, and enduring understandings over content quantity. This involves restructuring curriculum standards to focus on core competencies and interdisciplinary integration, allowing for thematic teaching and inquiry-based learning.

・Reform of Assessment Practices: Current high-stakes testing environments encourage surface-level learning and extensive content coverage. Reforming assessment systems to measure conceptual understanding, critical thinking, and application would incentivize teachers to prioritize depth. Formative assessments and portfolio-based evaluations should be encouraged to support student reflection and growth.

・ Systematic Support for Teacher Professional Development: Teachers must be equipped with the theoretical foundations and pedagogical tools to implement a depth-oriented curriculum. Professional development programs should include training in curriculum design, SLA theory, formative assessment techniques, and reflective teaching practices. Ongoing coaching and collaboration opportunities should be provided to sustain changes in instructional approach.

・ Institutional Flexibility and Autonomy: Schools should be granted greater flexibility in organizing timetables, integrating subjects, and tailoring instruction to local and student needs. As demonstrated by WWL schools, institutional autonomy enables innovation and responsiveness, which are key to successfully reducing curriculum overload while improving educational quality.

・Expansion and Systematic Study of WWL Practices: The WWL initiative should be expanded to include more schools and systematically studied to extract best practices. Longitudinal and comparative research should examine how curriculum design, instructional methods, and institutional structures in WWL schools influence student learning outcomes and teacher satisfaction.

・ Cross-National Dialogue and Learning: Japan's experience with curriculum overload and its responses through initiatives like the WWL program have relevance beyond national borders. Engagement in international networks, such as those led by the OECD or UNESCO, can promote shared learning and contribute to global knowledge about balancing educational breadth and depth.

6.3. Final Reflections

The question of how much we teach and how well students learn lies at the heart of educational quality. This study underscores that more content does not equate to more learning. Instead, an intentional reduction and refinement of curricular goals, paired with theoretically grounded and practically supported instruction, leads to deeper learning, more motivated students, and more empowered teachers.

As education systems around the world confront demands for reform in an age of rapid change, curriculum design must shift from accumulation to cultivation—from delivering information to fostering insight. The lessons from Japan's WWL schools offer a path forward: one that honors depth, coherence, and sustainability in education.

Notes:

1. The 2017 revision of Japan's Courses of Study by MEXT marked a significant shift in educational policy, emphasizing a balance between the quality and quantity of learning. This revision introduced the concept of "proactive, interactive, and deep learning", commonly referred to as "active learning", aiming to foster students' abilities to think critically, make decisions, and express themselves effectively.

Key Features of the 2017 Courses of Study are: (1) Active Learning Emphasis: The curriculum encourages teaching methods that promote student engagement through discussions, group work, and problem-solving activities. This approach is designed to move away from passive learning and towards a more student-centered model. (2) Curriculum Open to Society: MEXT aimed to create a curriculum that is responsive to societal changes and needs, preparing students to participate actively in a rapidly evolving world.

Three Core Competencies are: (1) Knowledge and Skills: Acquisition of fundamental knowledge and skills necessary for daily life and future learning. (2) Thinking, Judgment, and Expression: Development of abilities to think critically, make decisions, and express ideas effectively. (3) Learning Motivation and Humanity: Fostering motivation to learn and cultivating a rich human nature.

2. ZPD is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978[10], p. 86).

3. PBL is an instructional approach that emphasizes student-centered learning through real-world, meaningful projects. Instead of passively receiving information, students actively engage in exploring complex questions, problems, or challenges over an extended period. Key features of PBL are: authentic tasks, interdisciplinary learning, collaboration and communication, inquiry and critical thinking, and presentation and reflection. Educational benefits are: deeper understanding of content, critical thinking and problem-solving skills, collaboration and communication abilities, and self-directed learning and motivation.

4. RTOP is an instrument designed to evaluate the extent to which classroom instruction aligns with reformed, student-centered teaching practices, particularly those aligned with inquiry-based and constructivist approaches. Developed by Sawada et al. (2002[22]), RTOP assesses five main dimensions of teaching: (1) Lesson design and implementation, (2) Content: Propositional knowledge, (3) Content: Procedural knowledge, (4) Classroom culture: Communicative interactions, and (5) Classroom culture: Student/Teacher relationships. Each dimension is scored based on observable classroom behaviors, such as the degree of student engagement, the use of open-ended questions, the facilitation of conceptual understanding, and the promotion of critical thinking. RTOP is widely used in STEM education research but has also been adapted for other subjects, including language teaching.

Acknowledgments

I would like to express my sincere gratitude to the administrators, teachers, staff, and students of Otsuma Nakano Senior High School, Otsuma Tama Senior High School, Seikyo Gakuen Senior High School, Nakamura Gakuen Girls' Senior High School, Ehime University Senior High School, Shibuya Kyoiku Gakuen Shibuya Senior High School, Yokohama Senior High School of International Studies, and Nagasaki Nihon University Senor High School for their invaluable cooperation during school visits, as well as for their generous participation in interviews and various forms of assistance related to this research.

This research was supported by Otsuma Grant-in Aid for Individual Exploratory Research (Grant Number N2412).

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(Received May 28, 2025; accepted July 2, 2025)

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Takahiko Hattori, Ph.D., is a former returnee student whose educational journey spans both Japan and the United States, having completed his primary, secondary, and higher education in both countries. His distinguished academic career includes appointments as a Lecturer at Waseda University, Professor at Otsuma Women's University, and Visiting Professor at the Graduate School of Murray State University in Kentucky, USA. He currently serves as a Specially Appointed Researcher at the Institute of Human Culture Studies, Otsuma Women's University, and holds the title of Professor Emeritus at the same institution. In addition, he is a Lecturer at the Graduate School of the University of Tokyo. Beyond his academic roles, Dr. Hattori contributes to the field of English education as the Executive Supervisor for the United Nations Association's Test of English, Academic Supervisor for JSAF-IELTS, and Supervisor for Benesse's *My First English* series. His previous appointments include serving as an English instructor for NHK's English education programs and as an oral examiner for the STEP (Eiken) Grade 1 test. As a key figure in Japan's national initiatives for globalization—including the Super Global High School (SGH) and World-Wide Learning (WWL) projects led by MEXT—Dr. Hattori has played an instrumental role in shaping the future of global education in Japan.