

Japanese Educational Practices and Research Trends in JSET: Focusing on the One Tablet Per Student

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Abstract: Japanese education is experiencing a significant transformation in teaching and learning methodologies. The 2017 curriculum revision by MEXT emphasized active learning and the integration of personalized and collaborative approaches, marking a shift from traditional teacher-centered instruction. This transformation is particularly evident through two case studies at elementary schools. At Kansai University Elementary School, lesson study (jugyo kenkyu) facilitates professional development through systematic classroom observation and analysis. The implementation of one-to-one tablet devices has enabled innovative teaching approaches, as demonstrated in a fourth-grade poetry class where students created mind maps and composed poems using both digital and traditional tools. The integration of ICT has supported cross-curricular learning and enhanced student engagement across subjects. This educational reform is further strengthened by the GIGA School Initiative, which has standardized ICT infrastructure nationwide. Looking ahead, teacher education programs are evolving to prepare educators for this new environment, emphasizing both technological competency and pedagogical innovation. This systematic

approach to educational transformation aims to develop essential skills for the VUCA society while maintaining Japan's educational strengths.

Introduction

In post-COVID Japan, educational institutions from elementary through high school have adopted a one-to-one tablet PC program. The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched the GIGA School Initiative in February 2019, leading to significant improvements in school ICT infrastructure and the provision of one-to-one devices for students (MEXT,2019). Prior to the initiative, Japan faced notable challenges in educational technology integration. According to OECD surveys (National Institute for Educational Policy Research, 2023), Japan ranked lowest among OECD member countries in the use of digital devices during school lessons, despite above-average ICT usage outside of school. MEXT introduced the GIGA School Initiative with two primary objectives: creating an equitable, individually optimized education environment through integrated development of one-to-one devices and high-speed networks; and maximizing potential through blending traditional Japanese educational practices with technology (MEXT, 2019).

The introduction of tablet PCs has transformed traditional lecture-style teaching into more individualized and collaborative learning approaches, enabling interactive lessons with real-time student feedback and enhanced peer-to-peer communication. The initiative's success is reflected in the PISA 2022 results, where Japan achieved first place in mathematical literacy and scientific literacy, and second place in reading comprehension—a significant improvement from PISA 2018's eleventh place in reading. The OECD attributes this success to brief COVID-19 school closures, improved classroom instruction aligned with curriculum guidelines, and enhanced ICT infrastructure (National Institute for Educational Policy Research, 2023). The successful implementation of one-to-one devices, combined with teaching methods emphasizing personalized and collaborative learning, has contributed significantly to these improvements through sustained educational reform efforts.

Japanese education is undergoing a significant transformation in its approach to learning and teaching methodologies

MEXT conducts comprehensive curriculum revisions every decade. The 2017 revision emphasized active, interactive, and deep learning, while integrating personalized learning (*kobetsu-saitekina-manabi*) and collaborative learning (*kyodoteki-na-manabi*). Historically, Japanese education featured teacher-centered, unidirectional instruction, contributing to declining PISA performance. In response, curriculum guidelines underwent strategic changes to promote active student engagement and meaningful dialogue. Personalized learning combines individualized instruction and personalized guidance. This approach involves adjusting teaching materials and learning time to student characteristics while ensuring fundamental knowledge acquisition and critical thinking development. Contemporary guidelines have evolved from merely prescribing content to providing detailed recommendations for implementing active and personalized learning approaches, representing a shift towards comprehensive education that encompasses teaching methods and learning outcomes assessment.

The COVID-19 pandemic accelerated the implementation of one-to-one tablet devices in Japanese education. The convergence of technology push and demand-pull factors enhanced teachers' capabilities across educational sectors. Post-pandemic, while primary and secondary education have returned to face-to-face instruction, ICT utilization remains

significantly higher than pre-pandemic levels. This transformation has equipped educators with new technological competencies and created a more flexible learning environment, as evidenced by the continued integration of ICT across all educational levels.

MEXT has implemented comprehensive measures to enhance teachers' ICT instructional capabilities in one-to-one device environments. Beyond traditional face-to-face training, MEXT has expanded its support through online training programs, strategic information dissemination about effective ICT utilization, and training support initiatives to enrich both the content and opportunities for teacher professional development.

The online training component includes the publication of comprehensive digitalization guidelines for education and the provision of specialized training materials that enable teachers to learn about various ICT implementation scenarios in school settings. These resources offer practical guidance for integrating technology into daily classroom activities. Furthermore, local boards of education have established a systematic support structure through local financial measures, allocating one ICT support staff for every four schools. These support staff provide essential daily assistance to teachers in their ICT implementation efforts, ensuring continuous and effective technology integration in the classroom. Through this systematic support structure and lesson study, where schools share open lessons and exchange feedback, teachers are gaining both professional development opportunities and practical support, enabling them to effectively integrate tablets into their educational practices

Case study of Lesson study nurturing thinking skills using a tablet PC in Japan

This paper presents two case studies of educational practices in Japanese elementary schools, with the first examining the implementation of lesson study at Kansai University Elementary School, a private institution. The school conducts monthly lesson studies as part of its systematic professional development program, with the author serving as an educational advisor to these sessions.

Lesson study (*jugyo kenkyu*), a cornerstone of Japanese educational professional development, encompasses a structured process where teachers observe classroom instruction conducted by their colleagues. Following each observation, participants engage in collaborative analysis sessions to evaluate teaching methodologies, examine student responses, and assess learning outcomes. These sessions facilitate detailed discussions regarding both effective practices and areas requiring refinement. The role of educational advisor in these lesson studies involves systematic observation and analysis of classroom practices, contributing to the professional discourse surrounding pedagogical enhancement. This methodological approach to improving classroom instruction through collaborative observation and reflection demonstrates the embedded nature of continuous professional development in Japanese education. The regular implementation of lesson studies enables systematic examination and refinement of teaching practices, ultimately contributing to enhanced educational outcomes.

This private elementary school has been implementing tablet devices in their instruction since before the COVID-19 pandemic (Iwasaki et al, 2024). Teachers conduct lessons utilizing interactive whiteboards installed in their classrooms. As a case study, we examine a fourth-grade Japanese language arts class titled "Appreciating Poetry." The learning objective for this lesson is "to compose poetry by embodying the perspective of Shuntaro Tanikawa, a renowned Japanese poet." This objective is displayed on the blackboard, demonstrating a deliberate instructional design choice to ensure learners comprehend the lesson goals before engaging in class activities.

The purpose of displaying the objective is to enable learners to conduct self-assessment of their achievement upon completion of the lesson, determining whether they have successfully met the stated goal. Tablet devices are now commonplace in typical Japanese public elementary schools. These institutions are implementing instructional practices that emphasize interactive, student-centered, and deep learning approaches. In a first-grade Japanese language arts class, students study an expository text titled "The Work of Fire Trucks with Ladders" from their textbook's unit on "Various Working

Vehicles." Students utilize both tablet devices and library resources to enhance their learning experience. This multi-resource approach enables learners to access information beyond their textbook content. Following their research, students individually present their findings to the class.

In a fourth-grade Japanese language arts class focused on narrative text comprehension, the learning objective "Let's find evidence from the text to support our thinking" is explicitly presented to the students. This demonstrates another instance of clear learning target presentation to learners. Students share their individual interpretations supported by textual evidence, which the teacher records on the blackboard. A notable aspect of this teacher's pedagogical approach is that while they clearly understand the key points, they deliberately facilitate peer-to-peer discussion rather than providing direct answers. For instance, the teacher might say, "I'm not sure why we can make this interpretation. Student A, can you explain it?" This observational data revealed that rather than offering their own opinions, the teacher consistently poses numerous questions designed to elicit student responses and promote student-led discussion. However, students, having predominantly experienced one-directional instruction in the past, often find it challenging to express their own opinions or synthesize others' viewpoints. Developing personal perspectives requires academic skills, including reading, listening, speaking, and writing abilities. Consequently, significant emphasis is placed on cultivating these skills through classroom instruction. To facilitate this development, teachers employ various strategic approaches, utilizing specific Blackboard writing techniques and purposefully selecting different tools — worksheets, notebooks, or tablets — according to specific learning objectives. For instance, when students produce exemplary notes, teachers provide annotated feedback and display these works in the classroom, using different colored pens to highlight and explain particularly well-executed elements. The private elementary school case study demonstrated effective tablet integration for developing these capabilities. While the public elementary school examples featured less tablet usage, they illustrated focused efforts on developing reading comprehension and academic skills. To facilitate the sharing of such exemplary teaching practices, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has implemented the "Leading DX Schools" initiative. Through this program's website, educational practices from 200 elementary and junior high schools nationwide can be accessed via individual school sites. University faculty regularly participate in these schools' reporting sessions, providing professional guidance and feedback.

Future Prospects and Challenges

The implementation of one-to-one digital device initiatives has fundamentally transformed Japan's pre-service teacher education curriculum. In particular, the required course "Educational Methods and Techniques" now incorporates ICT-integrated educational practices, ensuring that future teachers can effectively facilitate active learning in their classrooms. This transformation aligns with Japan's response to the VUCA society, which emphasizes developing students' abilities in dialogue, independent thinking, and initiative-taking. These educational goals have led to the adoption of active and cooperative learning as central pedagogical approaches. Active learning encompasses various activities: expressing personal views, engaging in meaningful discourse, and synthesizing information. Success in these activities requires multiple competencies, including listening, critical reading, self-expression, collaborative creation, and writing proficiency. Traditional one-directional instruction has proven inadequate for developing these essential competencies, potentially hindering the successful implementation of active learning. To address this challenge, Japan has developed a two-level approach to educational transformation. At the macro level, the government provides systematic support through national online training programs, strategic ICT personnel allocation, and comprehensive professional development resources. At the micro level, teachers utilize lesson study—a traditional form of professional development—to enhance their tablet integration skills and pedagogical practices. Through this approach, teachers share exemplary practices, collaboratively develop effective teaching strategies, and continuously improve their digital integration skills. This dual-level system creates a cyclical approach to educational development, connecting elementary and secondary education practices with university instruction and teacher education. The result is a comprehensive framework for implementing one-to-one tablet devices in education. However, the transferability of this Japanese model requires careful consideration. Each country's unique teaching culture necessitates thoughtful examination of how these approaches might be adapted to different educational contexts while respecting local traditions and practices. This systematic integration of technology through national initiatives, combined with traditional

lesson study approaches, demonstrates how countries can successfully blend modern educational technology with established pedagogical practices. The Japanese experience highlights the importance of comprehensive support systems in educational transformation, providing valuable insights for educational systems worldwide as they navigate similar challenges in the digital age.

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