

Title

Institutional Conditions Shaping Sustainability-Oriented Inquiry in Secondary Education:
Insights from Teachers' Collaborative Reflection in Japan

Research Overview

This study examines the institutional conditions shaping sustainability-oriented inquiry in Japanese secondary education. Drawing on a collaborative teacher workshop, it identifies structural and pedagogical challenges and analyzes how organizational, professional, and policy factors interact to influence the implementation, sustainability, and broader applicability of inquiry-based practices.

Purpose of Study

Inquiry-based learning has been widely adopted in environmental and sustainability education to address complex socio-ecological challenges and to foster learner agency, systems thinking, and future-oriented decision-making. In particular, place-based approaches emphasize connecting learning to local community contexts, making inquiry a key pedagogical approach for sustainability-oriented education.

In Japan, recent curriculum reforms have strengthened the role of inquiry learning in secondary education, especially through the expansion of cross-curricular and integrated learning frameworks. However, despite this policy emphasis, limited attention has been paid to the institutional conditions that shape how sustainability-oriented inquiry is enacted and sustained in everyday school contexts.

Previous research has highlighted the importance of inquiry-based and sustainability-oriented learning in fostering systems thinking and learner agency (Wals, 2015). At the

same time, studies on educational change and implementation have emphasized that teaching practices are shaped not only by curriculum design but also by organizational conditions, professional capacity, and leadership structures (Fullan, 2007; Spillane, 2004). However, the intersection between sustainability-oriented inquiry and these institutional dimensions remains underexplored, particularly in secondary school contexts.

Existing studies often focus on curriculum design or student outcomes, while the organizational and professional environments in which teachers operate remain underexplored. Without understanding these conditions, it is difficult to explain why inquiry practices are unevenly implemented or why they often remain fragile and difficult to sustain.

This study aims to address this gap by examining the institutional ecology of sustainability-oriented inquiry through teachers' practical insights. It asks: (1) What structural and pedagogical challenges do teachers encounter in implementing sustainability-oriented inquiry? (2) What responses and solutions emerge through collaborative teacher reflection? (3) How do institutional and professional factors interact to shape the stability or fragility of such practices?

Research Methods

A five-hour professional development workshop was conducted in February 2024 at a university in Tokyo, involving 12 teachers from seven secondary schools across Japan. The participants represented diverse subject areas and school contexts, allowing for a cross-sectional examination of inquiry practices.

The workshop employed a World Café format, designed to facilitate open dialogue, collective reflection, and knowledge co-construction among participants. Teachers shared

their current practices, identified key challenges, and collaboratively explored possible responses and improvement strategies.

All discussions were documented and subjected to qualitative analysis. Identified issues were inductively categorized into five domains: (1) organizational culture, (2) curriculum management, (3) teacher capacity, (4) classroom practice and assessment, and (5) budget and external partnerships. The analysis adopts an implementation-ecological perspective, conceptualizing inquiry practices as emerging from the dynamic interactions among institutional structures, professional capacities, policy expectations, and resource conditions.

This analytical approach enables the identification of patterns that extend beyond individual cases and inform broader discussions on inquiry-based education.

Results and Discussion

The findings reveal a significant implementation gap between sustainability-oriented policy expectations and the realities of school practice. Teachers reported that heavy workloads, uneven distribution of responsibilities, and frequent staff turnover undermine the continuity of inquiry-based initiatives. These structural constraints often prevent inquiry from being embedded within the core curriculum, leading it to be treated as an additional or peripheral activity.

Furthermore, differences in teachers' conceptual understanding of inquiry and their facilitation skills contribute to variations in implementation quality. This highlights the importance of sustained and institutionalized professional learning opportunities, rather than relying on ad hoc or individual efforts.

At the classroom level, tensions emerge in balancing student autonomy with instructional

guidance, as well as in designing meaningful assessment strategies that do not increase teacher workload. In addition, while external partnerships are often essential for sustainability education, they may introduce economic or instrumental logics that risk overshadowing educational purposes.

Overall, this study provides theoretically and practically relevant insights into how sustainability-oriented inquiry is shaped by a complex interplay of institutional, professional, and pedagogical factors. It suggests that the continuity of inquiry practices depends not only on curriculum design but also on the alignment of organizational structures, teacher capacities, and resource conditions. These findings offer transferable insights for educators and policymakers in other national contexts where sustainability-oriented curriculum reforms are underway, contributing to a broader understanding of the institutional ecology of inquiry-based education globally.

Keywords:

sustainability-oriented inquiry; teacher professional learning; implementation ecology; secondary education; Japan