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# Japanese elementary teachers' problem-based learning through online professional development on teaching Japanese language learners in physical education

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## Abstract

Public schools in Japan have become increasingly linguistically, ethnically, culturally, and religiously diverse (Furuta et al., 2022). In rural regions, the number of Japanese-national students is declining in schools, and education services are shrinking (Mantanle, 2014) because of the aging population and low birth rate. This has led to serious economic concerns such as a smaller workforce and fewer taxpayers. This means that school districts in Japan will need new immigrant residents who can contribute to the sustainable future of education in Japan. However, in order to adequately serve this new population, Japanese teachers will need to receive training and demonstrate pedagogical knowledge and skills in relation to social justice and diversity, and facilitate inclusive and effective learning opportunities for all students.

Our research team conducted two exploratory studies focusing on (a) Japanese elementary school teachers' positioning in teaching physical education to Japanese language learners (Furuta et al., 2022) and (b) Japanese elementary classroom teachers' experiences with the involvement of immigrant parents regarding physical education (Tomura et al., 2024a). Based on the findings of these studies, our research team developed online professional development modules for teachers using a problem-solving approach as part of a project funded by the Japan Society for the Promotion of Science.

**Keywords:** Online Professional Development, Physical Education, Japanese Language Learners, Elementary Teachers.

## 1. Introduction

It is well known that many teachers are responsible for improving their practices through ongoing professional development (PD) throughout their careers (Avalos, 2011). Recently, online education formats became the central form of interaction not only between teachers and students (Murtagh et al., 2023) but also for teacher PD (Perry, 2023) around the world due to the COVID-19 pandemic. However, effective online education is not simply a matter of adapting the structure and modes of interaction of the face-to-face classroom environment to an online format (Sato & Haegele, 2018). Rather, cognitive expectations, instructional choices, and supportive practices need to be reconsidered in recognition of the complexity of issues (Peter, 2003). In physical education, MacPhail and Lawson (2020) and Luguetti et al. (2021) note that many teachers struggle to overcome hurdles to using online technology for PD and are hesitant to engage with others without seeing their faces. In contrast, the convenience and flexibility of

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online education allow in-service teachers to have choices, to access online modules and materials whenever and wherever they need, and to self-reflect and self-evaluate their own learning through small group discussion (Sato & Haegele, 2019), student debate (Calderón et al., 2020), and problem-based learning (Dwiyoogo, 2018). In Japan, our research team found that Japanese teachers had physical and mental health risks because of the fact that they have the longest working time across 34 countries and regions, at 53.9 hours per week (Sato, Mason, & Kataoka, 2020). Japanese teachers also have longer working days, shorter breaks, and shorter sleep times than teachers in England, Scotland, or Finland (National Institute for Educational Policy Research, 2019). Therefore, online PD is considered to be a potentially useful method to facilitate connections between teachers to help them share their experiences, knowledge, and ideas with other teachers beyond their geographic location.

Public schools in Japan have become increasingly linguistically, ethnically, culturally, and religiously diverse (Furuta et al., 2022). More specifically, in rural regions, the number of Japanese-national students is declining in schools, and education services are shrinking (Mantle, 2014), because of the aging population and low birth rate. This has led to serious economic concerns including a smaller workforce and fewer taxpayers. School districts will need new immigrant residents who can contribute to the sustainable future of education in Japan. However, in order to adequately serve this new population, Japanese teachers will need to receive training and demonstrate pedagogical knowledge and skills in relation to social justice and diversity, and facilitate inclusive and effective learning opportunities for all students. Our research team has been studying Japanese teachers' learning through online PD in teaching immigrant children in physical education, funded by the Japan Society for the Promotion of Science.

Recently, one of our research team members investigated Japanese elementary school teachers' learning experiences in a PD program for teaching physical education for Japanese language learner (JLL) children in public elementary schools. She created an online PD course which included ten modules of sixty minutes each, combined with live online sessions and on-demand video lectures (see Appendix A). Modules 1 and 10 were conducted in a live online format and modules 2 through 9 were conducted in a video-on-demand format. The modules included topics such as cultural awareness, diversity and inclusion, cultural relevance, cross-curriculum teaching of health and physical education, parental involvement, and practical cases for problem-solving. Participants were assigned to complete the ten modules and submitted reflective journal logs after each session. Additionally, they were required to submit two lesson plans, in modules 5 and 9. Data sources included a demographic questionnaire, the reflective journal logs, and the lesson plans. This study found that although teachers were anxious about teaching JLL children, they felt that they learned about cultural and religious awareness in physical education from the PD and planned ways to apply culturally responsive teaching in their physical education classes.

Additionally, Tomura et al. (2024b) created a problem-solving based online PD program using the findings of a previous study that identified problems and challenges voiced by Japanese elementary teachers regarding parental involvement of immigrant parents in relation to physical education (Tomura et al., 2024a). Tomura et al. (2024b) used visual aids to assist teachers' understanding in the PD program. Tomura et al. (2024b) designed online PD content focusing on three learning goals and objectives for elementary teachers including a) reflection on prior experiences regarding parental involvement of immigrant parents, b) theory-based learning of parental involvement of immigrant parents regarding physical education, and c) collaborative learning with other participants. The duration of the whole online PD was two months (eight weeks). One characteristic of this online PD is that the elementary teachers could access original YouTube video clips about various aspects of working with immigrant parents, which they selected according to their individual needs (Riley, 2017). Another component was a digital portfolio that was a computer-based, purposeful collection of, and reflections on, teachers' professional experiences (Espinoza & Medina, 2021).

## 2. Theoretical Framework

Our research team used various theoretical frameworks including andragogy theory (Knowles, 1989) in online PD in physical education for in-service teachers (e.g., Sato, Haegele, & Foot, 2017; Sato & Haegele, 2017). In andragogy theory, Knowles (1989) suggests that adult learners (in this case, teachers) should have motivation to enhance their professional skills or to satisfy their curiosity about a subject (e.g., physical education). The online PD contents were designed to incorporate teachers' prior experiences, interests, and needs. Knowles' insights are especially important for teachers' PD, where online education is often used for in-service teachers in continuing education programs, competency-based learning, and career development. Another theoretical framework, the theory of transactional distance (Moore & Kearsley, 2005), can encompass both organizational and transactional issues without losing sight of learner, institution, and nation together (Gokool-Ramdoo, 2008). In this theoretical framework, teachers and learners are both participating in the shared experience of exploring a common world (Keegan, 1993). Teachers and learners maximize their learning through mutual sharing and negotiations of meaning in such a manner that the locus

of control shifts from one to others constantly through a feedback process, which Saba (2007) referred to as the “feedback loop” (Gokool-Ramdo, 2008).

Recently, our research team has focused on transformative learning theory, which we have adopted in our online PD in physical education because we believe that online PD allows teachers to demonstrate their critical and reflective learning for professional living (Mezirow, 2000). Mezirow (2000) explains that teachers bring their assumptions, beliefs, and expectations about the world as part of a frame of reference through which they filter information and make meaning (Howie & Bagnall, 2013). More specifically, transformative learning establishes the presence of a set of interdependent core elements (i.e., practices) (Taylor, 2009) including (a) an emphasis on an individual's experiences, including prior experiences; (b) the promotion of critical self-reflection, including challenging previously held assumptions and beliefs; (c) engaging in dialogue with self and others; (d) a holistic orientation, inclusive of other ways of knowing; (e) an awareness of context, where learners develop an appreciation of how personal and sociocultural factors influence learning (see also Ellison & Sato, 2023); and (f) the importance of establishing authentic relationships among students and teachers where open communication occurs to achieve greater mutual and consensual understanding (Taylor & Laros, 2014).

### **3. Appropriate Method Selection**

Our research problems are best approached using a qualitative research method because we need to assess online PD as a complex, multi-componential construct; address questions regarding what works for whom, when, how and why; and focus on content and instructional improvement (Busetto, Wick, & Gumbinger, 2020).

Although longitudinal qualitative research would be an appropriate way to investigate online PD in physical education (Vogl, Zartler, Schmidt, & Rieder, 2018), one of the main obstacles and challenges of longitudinal studies is retaining an adequate number of participants, since participants may drop out from the study due to various reasons and circumstances. Since it is challenging to conduct longitudinal studies that track teachers' experiences prior to, during, and following the online PD, our research team has tried to triangulate data sources and analyse various types of data. Triangulation involves the use of multiple perspectives; in our case, that includes data from semi-structured interviews with individual teachers, focus group interviews, and electronic portfolios, all of which were interpreted through the lens of our theoretical framework. Glesne (1999) posits that the use of multiple data collection methods contributes to data trustworthiness. Use of triangulation is intended to evaluate and improve the accuracy of the data (Merriam, 1998). For example, semi-structured interviews are characterized by open-ended questions and the use of an interview guide (Hijmans & Kuyper, 2007). Specifically, in our research, semi-structured interviews have helped us gain insights into teachers' subjective experiences, opinions, and motivation (Dul & Hak, 2008). Additionally, focus group interviews are used to explore teachers' expertise and experiences based on the reasons or rationale for how and why teachers behave in certain ways. Another important data source in our research on online PD is the teachers' demonstration of their learning through an electronic portfolio, which is a purposeful collection of teachers' efforts, progress, and achievement. The electronic portfolios include items such as photographs, video clips, lesson plans, and assessments based on alignment with goals and objectives (Sato & Hodge, 2017).

Additional ways to minimize researchers' biases are to use member checking and peer debriefing. For member checking, the researcher takes the data and tentative interpretations back to the participants from whom they were derived and asks them if the results are plausible (Merriam, 1998). All data must be transcribed and sent back to each participant for confirmation. Peer debriefing is a process of exposing oneself to a distinguished peer in a way paralleling an analytic session, with the purpose of exploring aspects of inquiry that might remain only implicit in the inquirer's mind (Patton, 2002). Peer debriefers evaluate the interpretations of the data as accurate and representative of the teachers' statements.

### **4. Results (Part I): Japanese Teachers' Learning Experiences in Online Professional Development**

Based on our findings about (a) Japanese elementary school teachers' positioning in teaching physical education to JLLs (Furuta et al., 2022) and (b) Japanese elementary classroom teachers' experiences with parental involvement of immigrants regarding physical education (Tomura et al., 2024a), we embarked on a subsequent project, funded by the Japan Society for the Promotion of Science, focused on developing online PD modules using a problem-solving approach.

Our research team found that Japanese teachers learned about teaching JLLs in physical education better when critical features of effective PD were incorporated, including a content focus, active learning, coherence, duration, and collective participation (Desimone, 2009). Japanese teachers also felt that it was beneficial when the concept of culturally relevant teaching (Ladson-Billings, 1994) was embedded in the online PD.

For example, Japanese teachers felt that information about religious and spiritual practices in the PD enabled the teacher to better understand their students' religious backgrounds and apply that knowledge in a real context. Ladson-Billings (1994) defined culturally relevant pedagogy as pedagogy that empowers teachers intellectually, socially, emotionally, and politically by using cultural referents to important knowledge, skills, and attitudes. Through online PD, these Japanese teachers gained knowledge and skills and developed cultural competence. Additionally, following andragogy theory (Knowles, 1980), the Japanese teachers' prior experiences and pedagogical knowledge and skills helped them make a connection between their prior knowledge and new information about teaching JLL children in physical education while taking the online PD modules.

## **5. Results (Part II): Japanese Teachers' Learning Experiences regarding Parental Involvement in Online Professional Development**

Tomura et al. (2024b) found that Japanese elementary teachers had positive learning experiences using the online learning materials (e.g., digital portfolios and YouTube video clips) and that these helped them find strategies to solve problems, overcome challenges, and reduce concerns regarding parental involvement. There are three themes of findings that emerged from this study: (a) *digital portfolios as a tool for problem-based learning*, (b) *transformative learning experience regarding communication with immigrant parents*, and (c) *the need for Kenshu (teacher training) for all elementary school teachers*.

One of unique findings was that online PD should include transformative learning. In transformative learning, teachers demonstrate critical reflection on their prior experiences and identify either functional or dysfunctional instances based on new learning. In the study, the YouTube video clips allowed the teachers to gain insight into how to integrate information and communication technologies (ICT) and minimize the gap in cultural context between emic (insider) and etic (outsider) views between the teachers and immigrant parents in relation to physical education (Tomura et al., 2024b). Technology-integrated PD that follows andragogy theory produces a paradigm shift that affects teachers' subsequent behaviour (using ICT) for promoting social inclusion of immigrant parents (Tomura et al., 2024b).

Overall, the online PD program helped teachers become self-directed learners, analyse their learning needs, select learning materials, and evaluate their PD experience. This study also emphasized that real-life learning experiences during this online PD program are immediately applicable to the teacher's professional responsibilities in terms of parental involvement of immigrant parents in relation to physical education (see Appendix B).

## **6. Recommendations and Conclusions**

This review article introduced how our research team served as a change agent and supported Japanese elementary school teachers not only as processors of cognitive information, but also through transformational learning by sensing, visualizing, perceiving, and learning with others in the online PD (Cercone, 2008). However, there are still some improvements that need to be done in the future. In this section, our research team introduces several recommendations for online PD in relation to physical education.

First, our research team recommends that school districts offer online PD workshop(s) and a mentoring system that provide a benchmark for administrators of school districts to evaluate the quality of educational services (for teaching JLL children in physical education) (Sato, Tsuda, McKay, Furuta, & Kajita, 2020). There are two things our research team needs to improve for enhancing the quality of online PD which allows school districts, administrators, and teachers gain knowledge of analytical and interpretative records of reflection on their practices, values, and strategies, and help enhance their critical thinking skills to identify their professional growth.

Second, in Japan, lesson study (*jugyo kenkyu* in Japanese) is an important organized PD opportunity for elementary teachers (Saito, 2012) and makes various types of knowledge more visible through colleagues' and mentors' feedback and suggestions about pedagogy and students' reflective and critical thinking (Sato, Tsuda, Ellison, & Hodge, 2020). Our research team encourages school districts to develop online lesson study for elementary teachers. In this way, school districts can automatically secure online data including lessons, bulletin board communication, feedback communication, and lesson reflections, so that school districts may continuously analyse and share this information with new teachers.

Third, our research team suggests that pair or collaborative reading and theory learning while developing online PD may enhance learning in physical education (Sato & McKay, 2020). This strategy provides our research team more opportunity to learn about establishing another or alternative theoretical framework that increases the quality of online PD contents (Li & Nes, 2001). Through the experiences, our research team can share their prior knowledge and experiences and build new knowledge through theory learning in online PD.

To better support future researchers, this study encourages physical education researchers and graduate students to learn how to develop a blueprint of the theoretical framework, research method, and presentation of the results using online PD research sources in colleges and universities. Our research team hopes that Japanese teachers and researchers will build capacity, expertise, and knowledge to improve the teaching of JLLs as well as involvement of their parents through a spectrum of online PD in physical education.

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### Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of the University of Tsukuba (protocol code 体 022-100, approved September 26<sup>th</sup>, 2022).

### Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

### Conflicts of Interest

The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

## Appendix A

Module Description

1. Introduction	Guidance of the online course, Sharing the experience in teaching JLL children
2. Cultural awareness and cultural understanding	Understanding 8 cultural competencies, and the process of cultural understanding
3. Diversity and Inclusion in PE	The relevance between racial, religious, and refugee backgrounds and PE/Sport
4. Culturally relevant pedagogy and culturally responsive pedagogy	Understanding the concept of culturally relevant/responsive pedagogy, and the teachers' competencies in teaching diverse children
5. Reflection	Looking back on their lesson practices
6. Health education with comparison in other countries and Japan	Case studies comparing the school culture in other countries and Japan, and critical thinking about teaching health education to JLL children.
7. Parental involvement	Case studies to promote parental involvement
8. Case studies of PE including JLL children	Case studies of integrating the concept of cultural relevancy in PE
9. Application of Action plan	Application their learning to their PE lesson plan.
10. Group discussion	Online discussion about their learning and teaching JLL children


## Appendix B

**Case Number 1: How to explain to parents about PE-related school events**

What was the problem?

- Explaining about school events that immigrant parents are not familiar with
- Handling a language barrier during phone communication


**Solution① Use parents' first language**



1. Ask a school translator to join during communication with immigrant parents
2. Use translation devices or apps, which are convenient tools

**Solution② Use visual materials in face-to-face communication**

1. Distribute school letters which are written in the parents' first language
2. Use pictures or videos of school events to help parents be able to visualize them
3. Ask children to explain to their parents about school events using visual materials



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