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Research Article

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Exploring Mentor Teachers' Experiences and Practices in Japan: Formative Intervention for Self-Directed Development of Novice Teachers

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Abstract: This study pursues interventions by mentors in different mentoring phases. The mentoring refers to Engeström's (2011. From design experiments to formative interventions. *Theory & Psychology*, 21(5), 598–628) formative intervention to promote the self-directed development of novice teachers. This study involved data obtained from the preliminary survey, fieldwork experiences, and interviews with mentees during teacher training. The survey data were descriptively analysed for the close-ended question and thematically coded using an inductive approach. The fieldwork and interview data were thematically analysed. This study uncovered themes with supporting subthemes to identify mentors' activities addressed during the mentoring process: designing a class, determining teaching methods, and reviewing a class. The themes for these processes were setting the direction for self-directed problem-solving, collaboratively clarifying unclear and ambiguous aspects of the teaching method, assessing good instructions and providing clues for further growth, and designing an opportunity for learning in dialogic communication and mutual negotiation. Mentor training opportunities are needed for experienced teachers to pursue the intervention that supports the self-directed development of novice teachers. This is a unique study to explore interventions that meet the needs of novice teachers according to mentoring phases, in certain contexts.

Keywords: mentoring, formative intervention, novice teacher, teacher training

1 Introduction

Two urgent issues relate to supporting novice teachers in Japan. First, the mass retirement of teachers will continue in the next few years, resulting in a significant increase in the number of new teachers hired. This requires schools to take systematic measures to develop their teaching quality (Kawasaki, 2019). Since novice teachers now comprise a significant proportion of the teaching staff in many schools in Japan, their training has attracted ongoing attention due to its importance in ensuring the quality of education. Second, as mentors for novice teachers, experienced teachers are required to provide appropriate support in the form of interventions. This mentoring support depends on the novice teacher's experience and ability. Due to the shortage of teachers, municipal boards of education, which are in charge of teacher recruitment and development in Japan, offer various routes available to recruit teacher candidates from different backgrounds. Some candidates apply for teaching positions right after the university graduation without any teaching experience, some have part-time teaching experience, and some have worked in a different field from teaching. Thus, novice teachers with different experience of teaching require flexible training methods to encourage their autonomous development (Corbell, Booth, & Reiman, 2010).

However, mentoring in Japan tends to be an instruction-based, one-way approach, in apprenticeship mode, without encouraging novice teachers in dialogue to create new knowledge (Asada, 2012). Although this may come from the Japanese culture where seniority and vertical relationships are emphasised (Sugimoto, 2003; Triandis, 2001), researchers argue that encouraging autonomous problem-solving through trial and error leads to the growth of the novice teacher (Asada, 2012; Fantilli & McDougall, 2009; Author). Since Engeström's (2011) formative intervention emphasises the agency of mentees with which they shape their work, the ways of providing mentoring play a key role in the new learning design for mentees. Although the

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formative intervention encouraging self-directed development has been studied in research for adults' learning (Engeström, 2011; Sannino, Engeström, & Lemos, 2016), few studies have investigated mentoring that meets the needs of novice teachers in the Japanese context. Thus, this study aims to pursue mentoring referring to Engeström's formative intervention that enables the novice teacher to actively question the relevant issues, set the direction for solving the issue, and review successful results and identify a new problem based on the novice teacher's awareness of the problem (Engeström & Sannino, 2010).

1.1 Mentoring for Novice Teachers in Japan

Since mentoring for the novice teachers has drawn attention to developing their educational expertise, the need of the training for mentors has been called for (Roegman, Reagan, Goodwin, & Yu, 2016). Many municipal boards of education in Japan have developed the curriculum of the novice teacher training and created on-the-job training (OJT) systems that deploy mentors to guide novice teachers. In elementary schools in Tokyo, for example, in-house novice teacher training and systemised training by mentors are provided for 300 h over the novice teachers' first 3 years (180 h in the first year) (Tokyo Metropolitan School Personnel In-Service Training Center, 2008). Generally, former managerial teachers and experienced teachers are appointed as mentors. The mentors provide guidance and advice on teaching, ethics, classroom management, and the division of school responsibilities. Mentors observe a novice teacher's class for one or 2 h each week, demonstrate their class to the novice teacher for one or 2 h each week, and provide guidance to the novice teacher after school hours on the day when the mentor observes or demonstrates a class. The mentor takes another 1 or 2 h a week to guide or advise the novice teacher in tasks other than classroom teaching. Accordingly, novice teacher training has been an in-depth guiding system.

However, 20 years after the training establishment, challenges of the OJT system have been identified. For example, the survey carried out by the Hyogo Prefectural Board of Education (2007) indicated that novice teachers do not learn enough regarding subject teaching and student guidance in training. Compared to mentoring approaches in other countries, such as teacher residency defining mentors' role as co-constructors of knowledge with novice teachers (Roegman et al., 2016), the training of novice teachers in Japan tends to be an instruction-based, one-way approach by mentors (Hyogo Prefectural Board of Education, 2007),

which may hinder the autonomous development and motivation of novice teachers. Yufu (2009) demonstrated three reasons that may hinder the autonomous development of novice teachers in the OJT approaches: partitioned knowledge and skills, a belief in linear development of novice teachers, and lack of recognition that learning is interactive. In the context of teacher training, this may happen as training programs that focus on discrete teaching techniques or theoretical concepts without providing opportunities for mentees to understand how these elements interact in the actual classroom (Darling-Hammond, 2010). In instruction-based mentoring, mentors tend to believe that novice teachers steadily improve their teaching although their experiences include periods of growth, stagnation, and even regression (Yufu, 2009). When novice teachers encounter difficulties, the mentor and the mentees may perceive these experiences negatively if they believe that progress should be always linear (Day, 1999). Researchers pointed out the problem that mentors tend to speak excessively because the relationship between mentors and mentees is inevitably asymmetrical due to the unbalance of their position and experience (Schein, 2009; Wakimoto, Kariyado, Yaegashi, Mochizuki, & Nakahara, 2013). In such asymmetrical relationships, novice teachers may lose interactive learning opportunities, such as collaboration with colleagues, reflective practices, and constructive feedback from mentors or colleagues (Wakimoto et al., 2013; Yufu, 2009).

To further understand the issue of mentoring, the Japanese cultural and political contexts should be considered. First, Japan has strong cultural and social norms that emphasise appropriate and expected social interactions (Sugimoto, 2003; Triandis, 2001). The hierarchy among social positions and authorities is considered important in the culture (Triandis, 2001). Generally, relationships between mentors and novice teachers are understood as instructive, one-way, and sometimes inducting to the mentors' ideas and plans. Mentors are usually experienced teachers who have a recommendation from the principal (Tokyo Metropolitan Board of Education, 2018). The mentors perform their duties consistent with the intentions and culture of the principal and the organisation. Since their social positions are relatively high in the school context, other teachers have difficulty expressing their opinions to the mentors and novice teachers (Author).

Second, after introducing a neo-liberally oriented educational policy, Personnel Evaluation System of School Management, starting from 2000 (Sugasawa, 2006), municipal boards of education evaluate how novice teachers as mentees develop their abilities, including teaching and student management. Mentors are expected to report the development of novice teachers to the principals. The

educational policy could plausibly make mentors feel that they should be accountable for their instructions to novice teachers (Edwards & Protheroe, 2004; Wang, Odell, & Schwille, 2008). As a result, the development of novice teachers is left only to the mentors, who may impose their success stories on the novice teachers (Author). Furthermore, novice teachers feel embarrassed and pressured in such relationships, for example, when a mentor interrupts in the middle of class (Author). Thus, the hierarchical culture and neo-liberalistic educational policy leave little leeway to have dialogue-negotiation between mentors and novice teachers and undermine the professional autonomy of novice teachers (Lassila, 2017).

Although novice teachers could include teachers who are in early career stage, in this study, in Japan, novice teachers refer to the teachers who are in the first year of teaching, although they may have previously worked in other fields.

1.2 Problems of Mentoring for Novice Teachers

Mimicking mentors' managerial and curricular style of mentors provides novice teachers with rich experience and a model to solve problems. However, it is insufficient for the implementation of classroom instruction and the professional development (Edwards & Protheroe, 2004; Ingersoll & Strong, 2011). Because teaching is complex and interactive work, novice teachers may face situations that they have never been faced (Lampert et al., 2013). Since novice teachers may struggle to develop classroom activity without the insight into the rationale behind specific strategies and teaching value of themselves, they are required to adjust classroom activities to meet students' interests based on critical reflection, experimentation, and continuous learning (Ingersoll & Strong, 2011). Although few studies have investigated the self-directed development of mentees, previous studies point out the challenges of conventional mentoring approaches that focus on situational adjustment, technical guidance, and mental support (Feiman-Nemser, 2001). For example, Edwards and Protheroe (2004) identified that one challenge of mentoring that mimicking the mentor's teaching style may lead the novice teacher to interact with students and address class management and the curriculum using practices designed by the mentor with superficial understanding pedagogy. Similarly, Wang et al. (2008) argue that successful mentor-mentee relationships explore teaching by reflecting, observing, modelling, and supporting one another's teaching, not merely adapting mentors' approaches. Other

research demonstrates that mentors tend to take a leading role in the dialogue and dominate the conversation during interventions (Mena, Hennissen, & Loughran, 2017). Such a mentor-directed approach can be problematic because it makes the mentee dependent on the mentor and hinders the mentee's development of professional autonomy (Harrison, Lawson, & Wortley, 2005). Although the mentor does not adopt a mentor-directed approach, the mentor may have ambivalent relationships with mentees where the goals of them are different (Vaitzman Ben-David & Berkovich, 2021).

To overcome a mentor-directed approach, researchers argue the skills of mentors: co-thinking about teaching with novice teachers rather than imposing ideas; concentrating on fundamental teaching challenges of novice teachers that they may not have realised; assisting novice teachers in framing their self-identified teaching; and modelling teaching that exemplifies good teaching ideas (Feiman-Nemser, 2001; Wang et al., 2008). Based on the skills, dialogue-based mentoring encourages professional autonomy characterised by interaction and will be formed among social relationships (Heikkinen, Pennanen, Markkanen, & Tynjälä, 2020). When practising dialogue-based mentoring, finding a balance between dialogue and strategy becomes the purpose of mentoring (Heikkinen, Wilkinson, Aspfors, & Bristol, 2018). That balance can be understood as the conflict between support and evaluation or between the two roles of mentoring and evaluating (Heikkinen et al., 2018). Furthermore, they argued that the balance could be achieved only in the unavoidable tension between the mentor as support and an evaluator. Thus, the mentor is required to manage that tension in dialogue-based mentoring to support the self-directed development of novice teachers (Fantilli & McDougall, 2009; Heikkinen et al., 2018).

1.3 Formative Intervention for Mentor Intervention

Since mentoring centred on instruction-based and one-way approaches postulates linear development of mentees, few mentoring programmes emphasise novice teachers' agency and self-directed learning through relationally working with mentors (Edwards, 2017). The approaches often overlook that mentors and mentees are purposeful and interactive human beings who continually interpret and reinterpret situations in their own ways (Engeström, 2011). According to the previous studies (Burger, Bellhäuser, & Imhof, 2021; Richter et al., 2013), teacher mentoring can be divided into constructivist- and transmission-oriented mentoring. While transmission-oriented mentoring style is based on a

behaviourist concept of learning, meaning that knowledge is provided by the expert and transferred in a directive and unilateral manner to the rather passive novice, constructivist-oriented mentoring, on the other hand, implies collaborative reflection and exploration with the understanding that learning is a bidirectional and interactive process (Burger et al., 2021). The expansive learning theory can help solve the difficulties involved with mentoring by focusing on the relationship and dialogue between the mentor and the mentee (Figure 1) (Engeström, 2020; Engeström & Sannino, 2010). The constructivist process of expansive learning that produces development through active practices is the process of forming agency (Engeström, 2020). Therefore, the agency can be regarded as the self-directed development of the novice teacher (Engeström & Sannino, 2010; Eteläpelto, Vähäsantanen, & Hökkä, 2015), which can be supported by mentoring as described in this study.

The formative intervention aims to generate the self-directed development of mentees by encouraging the active behaviour of the mentee arising from dialogic communication and mutual negotiation (Engeström & Sannino, 2010; Sannino et al., 2016). The formative intervention suggests a learning cycle that occurs as a process of expansive learning. The cycle includes the processes of *questioning*, *analysing*, *modelling*, *examining*, *implementing*, and *reflecting* (Figure 1) (Engeström & Sannino, 2010). First, in the process of questioning, a mentee and a mentor criticise or reject several aspects of the previously accepted practice and existing

knowledge. Second, they try to analyse the problematic situation by explaining the mental, discursive, or practical transformation of the situation. Third, they model an explicit and simplified idea that offers a solution to the situation. Fourth, the solution is examined to understand its dynamics, potentials, and limitations. Fifth, the mentee and the mentor reflect and evaluate the solution to form a new suitable practice.

The conditions and contexts surrounding mentors and mentees, such as knowledge, abilities, relationships, and the school organisation, differ, leading to the assumption that no absolute mentoring style exists. Engeström and Sannino (2010) claim that the expansive learning cycle does not represent a generalised formula of learning phases. Since no previous study examining the relationships between mentors and novice teachers has used the expansive learning cycle, this study regards the processes of questioning and analysing as *designing a class*, modelling, examining, and implementing as *determining teaching methods*, and reflecting as *reviewing a class* when considering the context of mentoring for novice teachers (Figure 1). In designing class, a novice teacher is motivated when they face practical challenges and conflicts in preparing a class with a mentor. The content and direction of the intervention depend on mutual negotiation between a novice teacher and a mentor (Engeström & Sannino, 2010). In determining teaching methods, the novice teacher makes a lecture plan with a mentor's support and conducts it. The mentor prioritises the novice teacher's initiative for problem-solving, negotiates understanding of the

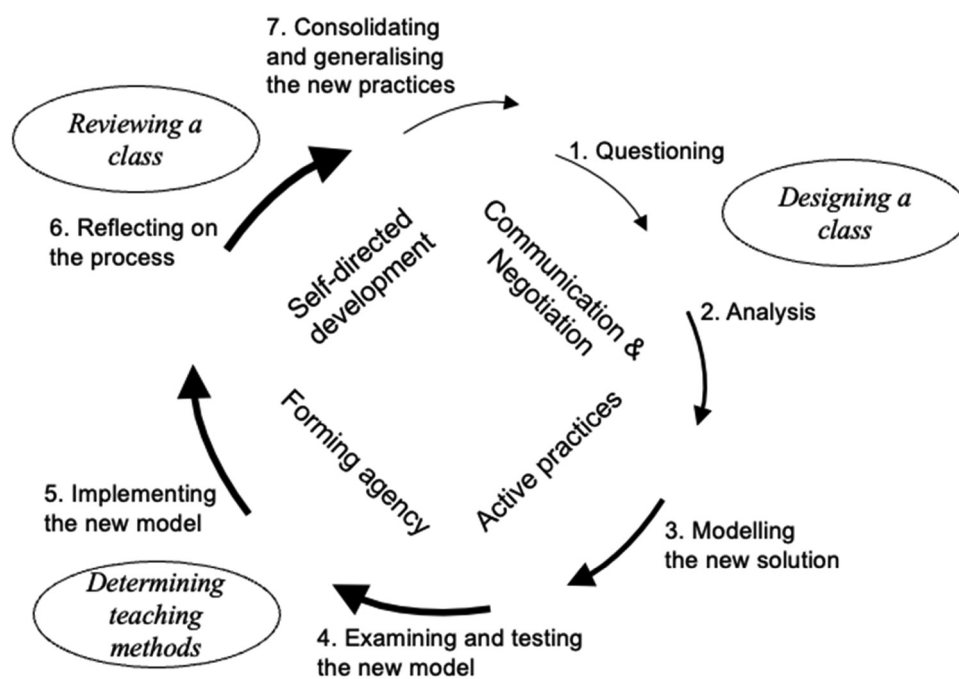


Figure 1: Conceptual model of sequence of learning actions in an expansive learning cycle adapted from Engeström and Sannino (2010).

teaching situation, and collaboratively participates in the activity to generate the novice teacher's capacity for teaching and creating lectures for student learning (Engeström & Sannino, 2010; Sannino et al., 2016). In reviewing a class, the novice teacher and the mentor collectively assess what they achieved and can improve next. The key point of the intervention is to create a formative process that values the novice teacher's initiative, rather than a one-way instructive and evaluative process in which the novice teacher listens to the mentor's guidance and advice (Engeström & Sannino, 2010). This process creates a new concept, which can be applied in other teaching situations as a framework for designing new solutions (Engeström & Sannino, 2010).

According to Engeström and Sannino (2010), a case representing practical activities provides valuable data for solutions and possible theoretical concepts. Moreover, the case study method is especially useful in exploring deep knowledge of mentoring in a certain context (Wang et al., 2008). This case study pursues interventions by mentors that promote the self-directed development of novice teachers by following two research questions:

- (1) How do the mentor teachers experience their mentoring practices for mentees' self-directed development when mentoring utilising the formative intervention?
- (2) What kind of mentoring based on the formative intervention for the mentees' self-directed development do the mentors conduct when they are designing a class, determining teaching methods, and reviewing a class?

2 Methods

2.1 Research Design

This case study comprises two parts: a preliminary survey and main fieldwork. The aim of the survey was to grasp mentors' challenges. After clarifying mentors' challenges in the survey, mentoring intervention in the fieldwork was developed according to the formative intervention (Engeström & Sannino, 2010). The survey contained three questions. The first was closed-ended with six options: "What is your focus during mentoring?" The answering options are drawn from teachers' duties defined by the Ministry of Education, Culture, Sports, Science, and Technology (2006) in Japan including lecturing, managing student discipline, communicating with parents, conducting school administrative work, and communicating with colleagues. Participants who chose "other" option used a free descriptive format to explain their focus. The second and third questions were open ended: "What challenges do you

face when you are mentoring?" and "What competence do you think is required for a mentor?"

Fieldwork data were collected by recording the mentoring discussions between the mentors and mentees and through semi-structured interviews with the mentees to support crystallisation with multiple data sources (Creswell & Poth, 2018). The mentoring discussion records comprised 3.5 h for Mentee A and 4.5 h for Mentee B. Individual semi-structured interviews lasting approximately 1 h were conducted between one of the researchers and each mentee after the intervention process.

Concerning research ethics, permission to conduct this study was gained from the ethical committee of the university where the first author works. The committee followed the Declaration of Helsinki. In both the survey and fieldwork, participation was voluntary, and the participants were informed that any data could be withdrawn at any time.

2.2 Participants

The preliminary survey component sampled mentors working in elementary schools in Tokyo. A convenience sampling method was adopted to identify the sample population from one prefecture in Japan. We first contacted the concerned authorities for permission to administer the survey. After obtaining the permissions, one of the researchers contacted the school principals and informed them of the study's aim. We provided the principals with a set of paper-and-pencil surveys, along with self-addressed, stamped envelopes, which the principals delivered to mentors who accepted to participate. We sent the request to 81 schools; 28 schools replied, 3 of which did not have mentors. Thus, 25 mentors from 25 schools participated in the study. The demographic and background information on the participating mentors is presented in Table 1.

The fieldwork component of this study was conducted during a teaching practice period at an elementary and a junior high school affiliated with a national university in Tokyo. Two mentors (Mentor S and Y) working at the schools were selected as a sample because they have participated in a monthly study group for 7 years where they studied the formative intervention (Engeström & Sannino, 2010) with university researchers and other teachers from different schools. Since each participant gives presentations about their practices using the formative intervention in the group, the authors and the mentors shared an understanding of the theory. Moreover, the two mentors scrutinised the outline of this study before the study.

Table 1: Survey participants' demographic and background information

| Demographic and background information | | <i>N</i> |
|--|--------------------|----------|
| Gender | Female | 19 |
| | Male | 5 |
| | No answer | 1 |
| Age | 30–39 | 8 |
| | 40–49 | 6 |
| | 50–59 | 3 |
| | 60–69 | 8 |
| Teaching experience | 5–9 years | 3 |
| | 10–19 years | 10 |
| | More than 20 years | 12 |
| Experience as a mentor | 0–1 year | 7 |
| | 2 years | 8 |
| | 3 years | 3 |
| | 4 years | 2 |
| | 5 years | 5 |

The two mentor–mentee pairs were observed during the practice period: (1) Mentor S and Mentee A, and (2) Mentor Y and Mentee B. While Mentee A and Mentor S were engaged in a class for ethics where the students learn to have loyalty to their hometown, Mentee B and Mentor Y did a class for life environment studies where the students observed animals and plants living in the local environment. Mentoring discussions as mentoring opportunities were held for the following three instructional situations: (1) designing a class, (2) determining the teaching method, and (3) reviewing a class. Two 30-day fieldwork sessions were conducted to cover all the situations of each mentoring pair. The first fieldwork session was held in June 2018; the second was conducted in May and June 2019.

2.3 Data Analysis

Regarding the preliminary survey data, descriptive statistics from the closed-ended survey question were presented. Responses to the two open-ended questions were thematically coded using an inductive approach (Braun & Clarke, 2006).

Concerning the fieldwork data, the researchers manually transcribed the fieldwork data before analysing it using the thematic analysis method (Braun & Clarke, 2006). First, the researchers extracted the data per sentence corresponding to each situation: (1) designing a class, (2) determining teaching methods, and (3) reviewing a class. Next, the sentences were inductively paired with codes that represented certain meanings as subthemes. Finally, the subthemes for each situation were conceptualised as a theme supporting the self-directed development of mentees. When conducting inductive coding, the researchers discussed and

reflected on the codes and the analysis to ensure the trustworthiness of the findings (Creswell & Poth, 2018).

The original data were collected in Japanese. To present the results of the current study, first, the results were translated from Japanese to English by a professional translator retaining the original meaning of the results. After that, one of the authors, who is a native Japanese speaker and fluently uses English, checked the contents and the quality of the translated results to ensure the credibility in terms of the research context.

3 Findings

3.1 Survey Results

Analysis of the responses to the closed-ended question displayed that most participants focused on instruction concerning lectures (Table 2), indicating the mentors concentrated on mentees' classroom practices.

Analysis of responses to the second open-ended question revealed two major challenges mentors faced when mentoring: hesitation in advising mentees and difficulty in transmitting teacher professionalism (Table 3). Although the mentors ranged in age and level of experience, they appeared to agree on the challenges faced when mentoring. The first challenge – hesitation in advising mentees – indicates the mentors felt irresolute and encountered difficulties when considering the development of mentees.

Table 2: Mentors' focus during mentoring

| Survey question 1 answer Options | Count | Percentage of mentors (%) |
|---|-------|---------------------------|
| (1) Instruction concerning lecture | 22 | 88 |
| (2) Instruction concerning student discipline | 7 | 28 |
| (3) How to communicate with parents | 4 | 16 |
| (4) How to deal with school administrative work | 5 | 20 |
| (5) How to manage communication with colleagues | 2 | 8 |
| (6) Other | 14 | |
| – Issues about health and well-being | 4 | 16 |
| – The importance of active behaviour | 1 | 4 |
| – Priority of work | 1 | 4 |
| – Work etiquette | 1 | 4 |
| – How to learn in the school | 1 | 4 |

Table 3: Perceived challenges faced when mentoring

| Theme | Hesitation in advising mentees | Difficulty in transmitting teacher professionalism |
|--------|---|--|
| Quotes | <ul style="list-style-type: none"> - "I am not sure to what extent I should instruct on classroom practice and student discipline." - "I wonder how much I should help the mentee." - "It is difficult to estimate how much the mentees solve problems on their own." - "It is difficult to balance development of the mentee with classroom management." | <ul style="list-style-type: none"> - "They need to be more responsible as professional teachers." - "My mentee could not change easily when I provided advice on work etiquette, like communicating with colleagues and keeping deadlines." - "It is difficult to convey what I am thinking." |

The second challenge – difficulty in transmitting teacher professionalism – illustrates that, since the mentors want to train the mentees on aspects of professionalism based on the mentees' agency, the mentors' approaches usually expected by the cultural and political contexts conflict with what they want to do.

Concerning the question regarding the required abilities of mentors, the theme "the ability to intervene according to the mentee's situation" was extracted (Table 4). The mentors experienced conflict between instructing on a precise teaching plan and acknowledging mentees' agency when they intervened. This preliminary analysis uncovered the mentors' need for intervention models to follow.

3.2 Mentoring that Encourages Self-Directed Development of Novice Teachers

The key mentoring themes elicited from the records from the teaching practice period were found in each process: (1) designing a class, (2) determining teaching methods, and (3) reviewing a class. The findings are summarised in Table 5.

3.3 Mentoring Themes During Designing Class

During her interview, Mentee A said that she experienced a conflict between her "motivation to create a draft of a teaching plan and expectations of a class" and "concerns about a class" when she was designing her class. When

asked whether she felt confident or anxious during her preparation for the class, Mentee A answered that she was motivated to design a class and elaborated on the draft using her ideas. She explained that she had expected to teach the class based on her plan, but she was uncertain and concerned about proceeding because she had planned for a predictable reaction from the students, but she was not sure if she sufficiently understood the students. The conflict between confidence and anxiety is reflected in the following comments she provided:

- When I came up with an adequate configuration of the class, questions, and work, I felt as if I had successfully added a piece of a jigsaw puzzle.
- Intuitively, I thought that the plan would work, but I felt anxious about whether I could induce positive comments or activities from the students since I did not know how close I was to them.

Under these circumstances, Mentor S and Mentee A discussed setting a time for effective group discussion in class and discussed students' thoughts, activities, and predicted reactions. In the interview, when asked whether she believed her thinking had changed after the mentoring experience, Mentee A observed, "I can find time to allocate," "I can imagine the students' attitudes," and "I can clarify what to prepare before a class," which demonstrates that Mentee A's anxiety changed to motivation to create a specific class plan. This sentiment was echoed in the following comments from Mentee A:

- I was most encouraged by the mentor's words, "sounds interesting." Mentor S said that students do not usually

Table 4: Required abilities of mentors

| Theme | The ability to intervene according to the mentee's situation |
|--------|---|
| Quotes | <ul style="list-style-type: none"> - "The ability to give instructions and show a model after discerning to what extent mentees can do by themselves." - "The skill to grasp situations and determine whether I should help or let the mentees proceed on their own." - "The ability to encourage mentees' agency, regardless of the situation." |

have an opportunity to talk about their hometown, so the topic would liven up the class, so I can feel confident and have a clear image of a successful class.

- In addition, I can establish the structure of the entire class by being aware of how to proceed and what to consider.

Analysis of the interview demonstrated that Mentor S's intervention while discussing designing a class activity addressed the anxiety and needs of Mentee A and provided a significant opportunity for the relationship between mentor and mentee to deepen. Namely, the intervention fostered a trusting relationship. Thus, the subtheme was represented as (a) *building a relationship of trust*.

In addition, careful listening was symbolic in that many of Mentor S's remarks were dialogical, such as "I see" and "uh-huh." All were uttered with a positive listening attitude, as displayed in the following transcribed conversation:

Mentee A: For example, first, have the students read the text and then think about why people living around Cape Erimo have contributed to the Erimo district without leaving the district ...

Mentor S: Uh-huh.

Mentee A: Next, have the students think about what is inconvenient and what should be improved...

Mentor S: Good.

Mentee A: ...and how to resolve the inconvenience. Mentor S: I see.

Mentee A uttered 36 remarks that expressed her thoughts and vision, which was more than Mentor S uttered. The content and length of the remarks represented Mentee A's active involvement in designing the class and suggested that the mentoring meeting was based on the proactive class design, or agency, of Mentee A. Mentor S carefully listened to Mentee A's ideas about class design, saying "Yes" and "I see." As a result, Mentee A was able to find solutions, such as "I can imagine the students' attitudes" and "it became clear what to prepare." Mentor Y also displayed careful listening with a positive attitude, as illustrated in the following exchange:

Mentee B: I want students to have interests in many things. For example, a student collecting insects in a sandbox says that there is a line on their body. I want to appreciate this kind of voice and viewpoints.

Mentor Y: I see, so you want students to deepen their insights and interests.

Thus, the subtheme in designing a class was represented as (b) *positive listening to the novice teacher in dialogic communication*.

Furthermore, the mentors urged the mentees to determine a future direction. For example, Mentor Y tried to

clarify the direction of the next lesson by asking Mentee B, "What is the aim of tomorrow's life sciences lesson? It doesn't have to be concrete but let me hear what you are thinking." Mentee B demonstrated the core idea of creating her lessons in her remarks, "I want students to be interested in various things... Students' interests, I want to cherish those things." Therefore, the subtheme was represented as (c) *encouraging novice teachers to set a direction for future lessons*.

The mentors' actions represented by the subthemes allowed the mentees to obtain suggestions for solutions and some class models, while their proactive, independent attitude was respected. In this way, the mentees could set the directions of their solutions independently. Consequently, the subthemes were distilled into the theme for designing a class as *setting the direction for self-directed problem-solving*.

3.4 Mentoring Themes During Determining Teaching Method

While determining the teaching method, Mentor S's questions allowed Mentee A to clarify a specific method. Mentee A specifically devised ideas about proceeding with a class, gave adequate instructions, and effectively used the material. The conversation between Mentor S and Mentee A that follows illustrates Mentor S's process of questioning used to clarify the teaching method:

Mentee A: Focusing on feedback may be effective.

Mentor S: What do you mean by feedback?

Mentee A: For example, have the students look back on their own attitude, and then I make comments on the statements written by the students, or have them read my comments and look back on their attitude.

Mentor S: Uh-huh.

Mentee A: For example, subsequently introducing what other students thought may be effective.

Mentor S: I see. Good.

This questioning approach allowed Mentee A to clearly describe the significance of looking back and gave shape to the teaching method for the learning activity. This mentoring approach is demonstrated in the following remarks made by Mentor S:

- How do you approach the students about love for their hometown?
- What do you mean by feedback?
- Could that also be done in the affiliated junior high school?
- How do you ask the first question?
- Then, how do you attract the students' attention?

Table 5: Themes related to mentoring novice teachers from the teacher practice period

| | Designing a class | Determining teaching methods | Reviewing a class |
|----------|---|---|---|
| Theme | Setting the direction for self-directed problem-solving | Collaboratively clarifying unclear and ambiguous aspects of teaching method | Designing an opportunity for learning in dialogic communication and mutual negotiation |
| Subtheme | (a) Building a relationship of trust (b) Positive listening to the novice teacher in dialogic communication (c) Encouraging novice teachers to set a direction for future lessons | (d) Asking a question to clarify the teaching method (e) Prompting mentees' decisions (f) Agreement and suggestions to create a collaborative learning activity | (i) Attempting to learn from the novice teacher with a modest and sincere attitude (j) Creating a place to talk about one's educational value as a teacher with each other |
| | | (g) Valuing the good teaching points (h) Addressing problems identified together with the novice teacher | |

- ... 16 min are enough for students to express opinions.
- It may take less than 1 min for each group to express an opinion.
- How about introducing this first?

Mentor Y's question also enabled Mentee B to grasp a teaching circumstance more accurately, as displayed in the following transcribed conversation:

Mentor Y: Have you checked the school yard for extracurricular learning? Do know what are blooming now? Have you decided on the rules concerning picking up weeds and flowers without permission, and have you talked about the responsibility for taking them home?

Mentee B: Yes, I think the students need insect cages, nets, plastic bags for their belongings, right?

Because of these situations, the subtheme for determining the teaching method was represented as (d) *asking a question to clarify the teaching method*. Specifically, the action reflected in this subtheme enabled the mentees' descriptions of their ideas about teaching methods to help them to understand who should actively solve a problem. Namely, the mentees found a process for forming an agency that actively solved the problem. Moreover, the mentors asked questions concerning the mentees' decisions to prompt further decision-making:

Mentor Y: There are 9 insect cages and nets in each student group. But, what would you do?

Mentee B: Let's keep one cage for one group.

Mentee B made her decision based on the information presented by Mentor Y. The subtheme here was portrayed as (e) *prompting mentees' decisions*.

Furthermore, the mentors' suggestions and affirmative responses encouraged the mentees and the mentors to collaboratively find the direction for specific solutions. This is highlighted in the transcribed conversation that follows:

Mentee A: Time allocation may be difficult...

Mentor S: There are eight groups. If it takes 2 min for one group to move into position, present their opinion and move out of position, 16 min will be enough to have eight groups present their opinions.

Mentee A: Yes.

Mentor S: It may take less than 1 min to present opinions.

Mentee A: Then, have one group present their opinion within 1 min.

Mentor S: Sounds good.

Mentee A felt conflicted and anxious about the time allocation. Responding to Mentee A's remark, Mentor S clarified the actual time allocation in more detail. By saying "sounds good," Mentor S affirmed Mentee A's decision. Accordingly, Mentor S facilitated a collaborative process to create the learning framework with Mentee A.

Another conversation between these two teachers demonstrated that Mentor S's suggestion and affirmative response enabled the pair to collaboratively find the direction of the solution:

Mentor S: First, have the students read the textbook [...] How do you ask the first question?

Mentee A: Well, why did they aim to reactivate Cape Erimo?

Mentee A: To confirm what the students understood by reading the textbook.

Mentor S: I see. They can understand by reading the textbook.

Mentee A: I do not intend to focus on having them read the textbook.

Mentor S: Well, this is not a language class.

Mentee A: We may make use of this opportunity to have the students think about it more realistically...

Mentor S: Not only the photo of Cape Erimo... How about asking them how to get to Cape Erimo?

In her response to Mentor S's question, Mentee A clearly expressed her opinion that confirming the material content was sufficient, and Mentor S agreed. In the end, hearing Mentee A's remark, "we may make use of this opportunity to have the students think about it more realistically...", Mentor S perceived that Mentee A was anxious about subsequent steps and suggested a solution. Then, they collaboratively found the direction of the solution.

Another example of this type of intervention was demonstrated by a conversation between Mentor Y and Mentee B. When seeing a picture of a dandelion drawn by a student, Mentor Y said from his experience and knowledge, "This is not a single petal but a *Sympetalae*. There may be a child who notices this when disassembling the dandelion flower." On the basis of this comment, Mentee B developed her lesson plan, commenting, "Then, even though it is not mentioned in the textbook, I can point it out and confirm it when they actually see it." Based on the examples, the subtheme in problem-solving was described as (f) *agreement and suggestions to create a collaborative learning activity*.

The findings suggested the mentors' interventions during discussions on determining teaching methods were collaborative and negotiative, sometimes showing a solution and clarifying unclear points in the teaching method. Thus, the subthemes were conceptualised as *collaboratively clarifying unclear and ambiguous aspects of the teaching method*.

3.5 Mentoring Themes During Reviewing Class

During discussions to review a class, the mentors' interventions valued what the mentees had done in the class. For example, in the following conversation, Mentor S

found value in Mentee A achieving the main purpose of having the students think of the example as their problem, which Mentee A regarded as the core of the class:

Mentee A: I think the class went well in the sense that I achieved the aim of the class.

Mentor S: Yes, I think your story made the class go well. Just focusing on Cape Erimo would not lead the students to think about the situation as their own, since there is a gap between the situation of Cape Erimo and their own situation. However, when you talked about your neighbourhood, the Tamagawa River, and Germany where you lived as a child, the students were relaxed and lit up, which made me feel that the students came to think of the situation of Cape Erimo as their own.

Mentor S also valued Mentee A's work in the remarks "... you prepared the photo instead of just telling the students to open to xx page, which was more effective than having them read the textbook without any information" and "... whether there is an image or not makes a significant difference." Thus, the subtheme from discussions on reviewing a class was represented as (g) *valuing the good teaching points*.

In addition, when reviewing the classes, the mentors focused on the problem identified by the mentees and addressed it together with them. Although Mentee A was able to teach a class by using her prepared material, she was not entirely satisfied, believing she could have taught a more satisfying class. The following conversation displays how Mentor S focused on the problem together with Mentee A:

Mentee A: I can make a big difference in the class if I could draw upon the students' memories.

Mentee A: There may be various approaches...

Mentor S: What approach at what time do you think should be taken?

Mentor S: You prepared and showed the photo displaying Cape Erimo subject to desertification to the students instead of telling them, 'Open to page xx to learn the xxx today'. I think your approach was more effective than simply having the students read the textbook.

Mentor S: And I think it was good that you used the video. Don't you think so?

Mentee A: As we started class 5 min late, I talked at a too hurried pace while showing the video.

Mentor S: Well...You could take more time to show the video.

Mentee A: Oh, I see.

Mentee A: It would be better if I could explain it in detail more carefully.

Mentor S: Maybe you're right.

When Mentee A could not converge the points to be improved in the class, Mentor S asked, "What approach at what time do you think should be taken?" Mentor S then informed Mentee A that displaying the photo perhaps illustrated a memory related to environmental contamination

for the students. Mentor S's intervention intended to make the class more sophisticated by focusing on the environmental issues that Mentee A aimed to have the students think about as their own and for which she had put much effort into preparing. Simultaneously, Mentor S's intervention can be regarded as an approach related to Mentee A's objective. This intervention drew a reflective remark from Mentee A, "I talked at a too hurried pace." Mentor S shared Mentee A's reflection by saying, "Maybe you're right." This kind of intervention, which focuses on a problem that the mentee identifies and addresses with the mentor, was also observed between Mentee B and Mentor Y. When Mentee B reflected that she could not handle a situation between students, Mentor Y advised, "There is also learning how to overcome these problems. I think this is one point of view." Thus, the subtheme for reviewing a class was represented as (h) *addressing problems together that the novice teacher identifies*. These two subthemes (g and h) were distilled into the first theme for reviewing a class as *assessing good instructions and providing clues for further growth*.

Mentoring during the review of a class was also recognised based on the subthemes of *building a relationship of trust* and *positive listening to the novice teacher in dialogic communication* and had significant meaning for the evaluating process. This was found in the equal footing of mentors and mentees present in a relationship of trust, acknowledging that the mentor is also a learner, as illustrated by Mentor S:

Mentor S: Mentee A, your talk was effective. I would not be able to take such an approach. I would only be able to talk about my hometown. Your talk was a key point. You prepared the photos and data in advance for clarity, and you provided the opportunity for the students to predict and raise their hands to express their opinions on the subsequent situation. I think you have successfully achieved your purpose through these approaches. ... As I'm always too busy with work, I learned a lot today.

Mentee A created the teaching material by herself because she aimed to allow the students to think about the Cape Ermo environmental issues described in the textbook as familiar rather than as an issue detached from their daily lives. Mentee A displayed examples of where she had lived and written about her daily life abroad and environmental conservation for Tamagawa River, which was familiar to the students. Mentor S was very impressed by Mentee A's efforts to devise ways to have the students think of the topic as their own by talking about the environment in which Mentee A grew up and preparing materials that allowed the students to understand the situation easily. Mentor S was also impressed by the originality, noting, "Your talk was effective" and "I would not be able to take such an approach." These remarks indicate Mentor S modestly and sincerely learned from

Mentee A's approach. Thus, the subtheme for reviewing a class was described as (i) *attempting to learn from the novice teacher with a modest and sincere attitude*.

Furthermore, relationships in which a mentor and a mentee learn from each other were observed. Mentee B realised what a teacher should be when seeing Mentor Y enjoying himself while exploring a wildflower garden and saying, "I enjoyed it the most." Mentor Y said he wanted the students to have fun observing and exploring wildflowers. By touching the wildflowers, Mentor Y conveyed to Mentee B the importance of piquing students' interest in learning. Thus, the subtheme here was described as (j) *creating a place to talk about one's educational value as a teacher with each other*. These two subthemes (i and j) were distilled into the second theme for reviewing a class as *designing an opportunity for learning in dialogic communication and mutual negotiation*.

4 Discussion

This study is the first study that investigated mentors' experience and the kinds of mentoring aimed at self-directed development for novice teachers by applying Engeström's formative intervention.

Regarding the first research question, analysis of the survey data revealed that the mentors mainly focused on how novice teachers develop their lectures. This result was supported by the earlier findings that the role of mentors is mainly to support how to teach students (Feiman-Nemser, 2001). The survey results also suggest the mentors felt ambivalent because they wanted novice teachers to be independent, but simultaneously, they believed novice teachers need instruction from their mentors. This also accords with the previous studies (e.g., Vaitzman Ben-David & Berkovich, 2021) saying that mentors and novice teachers could have ambivalent relationships caused by their different expectations. Therefore, the survey results demonstrated that although the mentors recognised the importance of novice teachers' agency, the mentors were struggling to intervene in novice teachers' self-directed development.

Concerning the second research question, the findings of the fieldwork indicated a proper understanding of mentoring that promotes novice teachers' self-directed development based on the formative intervention. Themes were identified according to the teaching situations. During designing a class where the mentors and the novice teachers considered the aim and the main pillars of the class, *setting the direction for self-directed problem-solving* emerged as an important theme. Previous studies exploring mentors'

practices observed consistent results that co-thinking with novice teachers entails understanding their concerns, explaining their self-identified difficulties, or clarifying the challenges when framing and solving problems (Feiman-Nemser, 2001). Mutual interaction and negotiation encouraged by the mentors were key when focusing on issues the novice teacher put effort into preparing. By focusing on the issue, the novice teachers could provide an appropriate viewpoint, thereby raising aspirations and drawing out reflections towards future lessons, emphasised by the formative intervention (Engeström & Sannino, 2010). This point is vital for mentoring relationships in certain cultural contexts where the relationships tend to have one-way interactions that could not lead to new knowledge creation (Asada, 2012).

In determining teaching methods, *collaboratively clarifying unclear and ambiguous aspects of teaching methods* emerged as an important theme. The novice teachers were unsure whether their practices were appropriate and effective for students' learning. The mentors' role in determining teaching methods was found to help the novice teachers clarify the teaching method and support the novice teachers' decision-making. The results supported earlier findings investigating directive and nondirective mentoring by Mena et al. (2017). Their study found that mentors who use directive mentoring skills, such as giving opinions, tend to dominate the time of dialogue. Non-directing skills, such as questioning, enable mentees to discuss their concerns. Since dispositions of what and how novice teachers learn can affect their learning and classroom instruction (Wang et al., 2008), collaboratively determining teaching methods would be important for not only novice teachers' but also students' development overall.

Two important themes were found during reviewing a class: *assessing effective instructions and providing clues for further growth* and *designing an opportunity for learning in dialogic communication and mutual negotiation*. The novice teachers in this study felt that they could have done better with several points. This may come from their anxious feeling as a novice teacher. Thus, an important role of mentors in reviewing a class is to let novice teachers recognise what they achieved and encourage reflection with future-oriented words. These findings correspond with the previous studies' claim that reassessing the mentors' own established guiding methods and valuing the novice teacher's position encourage the novice teacher's self-directed actions (Engeström, 2020; Sannino et al., 2016). This finding further supports the idea that constructivist-oriented mentoring supports mentees' needs of their autonomy and expertise (Burger et al., 2021; Richter et al., 2013). In this study, the cultural and political context emphasises vertical relationships and accountability, which may make the

mentors demonstrate their modest and sincere attitude leading to mutual respect (Asada, 2012; Sugasawa, 2006; Triandis, 2001). Mentors may struggle with an emotion that they must ensure the expertise of novice teachers with a pressure from the teacher shortage and feel that they should guide and lead novice teachers in the Japanese vertical culture that focuses on seniority and hierarchy. However, the mentors in this study could create mutual respect based on emphasising dialogic communication and negotiation with the viewpoint of constructivist-oriented mentoring (Burger et al., 2021). This requires metacognition, where the mentor reflects on the relationship with the mentee and their own values. These are particularly valuable findings because the mentoring that encourages mentees' self-directed development was shown effective even in the cultural and political context that emphasises vertical relationships and accountability.

Since this study is not without limitations, directions for future research are suggested. First, although multiple data sources allowed the elaboration of the findings, data were collected from only two pairs. However, the finding suggests that, for example, such self-evaluation meeting is essential to any creative or developmental process in Japanese contexts. Thus, future research will confirm whether the practices including self-evaluation meeting found in this study are dominant in mentor–mentee relationships in other Japanese schools. The trustworthiness and generalisability of the findings would be enhanced by collecting data on various mentoring cases with or without the value of self-directed development of novice teachers and sharing an understanding of the formative intervention.

Second, this study sought to explore mentors' challenges with the open question survey, although the survey might not be enough to understand the challenge. Further studies should seek a deeper understanding of mentors' challenges with other qualitative methods, such as interviews. Third, this study sampled data from the mentor and mentee teachers working at an elementary and junior high school in Japan. Thus, the findings may not be generalisable to mentoring settings in other levels of education in Japan or other countries. Future research is recommended to study the issue in a larger context and different geographical areas.

Although Engeström and Sannino (2010) stated that no fixed pattern exists for formative interventions, this study's findings could indicate a guiding method for mentors. The findings demonstrate a mentoring intervention to support the self-directed development of mentees, illustrated through the mentee's process of finding a proactive solution through mutual negotiation with the mentor as an original learning activity created within their relationship (Engeström & Sannino, 2010). The mentoring practices found in the themes can

overcome problematic mentoring interventions where mentors dominate conversations with novice teachers based on the mentors' experiences. Since the mentors' agency was considered a crucial key, the mentors' interventions focused on expectation and endorsement of the mentees' actions. This study contributes not only to the national discussion but also to the international literature in that the formative intervention works, although the contextual challenges exist.

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