

Summary of Doctoral Dissertation

**The Effects of Short Online Reflection Training on
the Self-efficacy and Pedagogical Beliefs of Preservice Teachers**

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I. Structure of the Doctoral Dissertation

Chapter 1. Research Background and Purposes of the Dissertation

Chapter 2. Examining the Changes in the Self-efficacy and Pedagogical Beliefs of Preservice Teachers (Study 1)

Chapter 3. A Pilot Study of the Effects of Short Self-accessible Online Training on the Self-efficacy, Pedagogical Beliefs, and Reflections of Preservice Teachers (Study 2)

Chapter 4. Short Self-accessible Online Training for Improving Professional Learning of Preservice Teachers (Study 3 and Study 4)

Chapter 5. The Effects of Short Online Training Workshops on the Self-efficacy and Pedagogical Beliefs of Preservice Teachers (Study 5)

Chapter 6. Conclusion

References

Acknowledgment

Research Achievement List

Appendices

II. Summary of Doctoral Dissertation

Chapter 1. Research Background and Purposes of the Dissertation

Building self-efficacy to teach and pedagogical beliefs plays a decisive role in improving the professional teaching competency of preservice teachers in a virtual learning environment so that they will be able to cope with various challenges in their future teaching careers. As a measure of teachers' teaching confidence, self-efficacy refers to a teacher's judgment of his/her ability to reach the desired teaching goals and how well he/she can influence students' learning (Bandura, 1997; Guskey & Passaro, 1994). Pedagogical beliefs refer to teachers' confidence in effectively implementing their general pedagogical knowledge (PK) and teaching skills and behaviors (Voss et al., 2011).

Carrying out effective reflective teaching is emphasized in improving preservice teachers' teaching confidence and supporting them to be future outstanding teachers. Reflective teaching refers to teachers' reflections on their teaching practice, especially the problems they meet and their solutions for problem-solving (Schön, 1983). By observing and evaluating teaching behaviors, classroom observation also helps preservice teachers reflect on their teaching practice (Martinez et al., 2016). Therefore, reflective teaching and classroom observation, which focus on enhancing reflections, can be adopted as two practical approaches for preservice teachers to develop self-efficacy and pedagogical beliefs. Nevertheless, to my knowledge, no empirical research has been done to show their significance.

Adopting a quasi-experimental research design with mixed research methods, this dissertation consists of five associated studies aimed at examining the effects of short online training in reflective teaching and classroom observation on the

self-efficacy and pedagogical beliefs of preservice teachers. An original theoretical framework is proposed to develop preservice teachers' self-efficacy and pedagogical beliefs by promoting deep reflections via short reflection online training.

Some similarities were identified in preservice teacher education between Japan and China, such as the policies of preservice teacher education programs and preservice teacher training modes, revealing the feasibility of adopting short online reflection training in the Japanese and Chinese contexts.

Chapter 2. Examining the Changes in the Self-efficacy and Pedagogical Beliefs of Preservice Teachers (Study 1)

Self-efficacy and pedagogical beliefs formed during the preservice teacher education stage play an essential role in preservice teachers' teaching performance and future professional development (Bandura, 1997; Gove et al., 2011). Positive self-efficacy and pedagogical beliefs would encourage preservice teachers to reflect on their knowledge and skills autonomously, thus improving their teaching practice.

It has been demonstrated that student teaching experiences significantly predict preservice teachers' self-efficacy and pedagogical beliefs (Brown et al., 2015). However, little research has been done on the changes in preservice teachers' self-efficacy and pedagogical beliefs after student teaching in Japan during the COVID-19 pandemic. Study 1 aimed to examine the changes in the self-efficacy and pedagogical beliefs of preservice teachers after student teaching in Japan. Additionally, it is necessary to validate the questionnaires used to measure the self-efficacy and pedagogical beliefs of preservice teachers in the non-Western context in Study 1 first.

This study recruited 160 preservice primary teachers from a university in western Japan. Principal axis factoring analyses (PAF) were used to examine the validity and internal consistency of the two questionnaires based on the data from 133 preservice teachers who responded to the pre-test. Paired *t*-tests were used to examine the changes in the self-efficacy and pedagogical beliefs of preservice teachers after student teaching based on the data from fifty-seven preservice teachers who responded to the post-test.

The PAF results verified the validity and internal consistency of the two questionnaires, suggesting a successful adaptation of these two questionnaires into the non-Western context. The results showed that preservice teachers' self-efficacy was significantly increased after student teaching, suggesting student teaching is an essential source of influence on preservice teachers' self-efficacy. However, their pedagogical beliefs changed slightly, indicating that student teaching cannot enhance preservice teachers' pedagogical beliefs if their PK is insufficient to support their teaching practice. To help preservice teachers build positive self-efficacy and pedagogical beliefs in the early stage, a short self-accessible online training program was designed and tested in Study 2.

Chapter 3. A Pilot Study of the Effects of Short Self-accessible Online Training on the Self-efficacy, Pedagogical Beliefs, and Reflections of Preservice Teachers (Study 2)

A computer-based teacher training program provided a supportive interface for improving preservice teachers' teaching efficacy through reflective teaching guidance (Yeh, 2006). However, the effectiveness of short self-accessible online training is still unclear. Study 2 was conducted as a pilot study to verify the feasibility of short

self-accessible online training in improving the self-efficacy, pedagogical beliefs, and reflections of preservice teachers in China.

Fifteen preservice teachers in two universities in southern China were recruited in this study. The participants were divided into two experimental groups, the RT-CO Group and the CO-RT Group, which differed in the sequence of online training sessions. The online training was designed on two topics: reflective teaching and classroom observation. For example, in reflective teaching training, various reflection models were provided to familiarize preservice teachers with the process of reflection. After each training session, a reflection task was assigned to stimulate participants to generate deep reflections via writing reflective logs. For example, in reflection task 4, preservice teachers were asked to observe lesson videos of two overseas teachers and compare them to the lessons taught by Chinese teachers.

The participants were asked to take four narrated PowerPoints, once a week. The participants in the RT-CO Group first took two reflective teaching training sessions and then two classroom observation training sessions. The participants in the CO-RT Group took training sessions in reversed order. And they wrote four reflective logs according to the training sequence. Additionally, based on Study 1, the participants were asked to fill out the two updated questionnaires of self-efficacy and pedagogical beliefs before, in the mid of, and after online training.

Repeated measures analysis of variance (ANOVA) was adopted to analyze the changes in self-efficacy and pedagogical beliefs over time. Thematic analysis (Braun & Clarke, 2006) and a text-mining system (Kong, 2018) were used to analyze preservice teachers' reflective logs to explore a general understanding of their reflections.

The results showed that self-efficacy and pedagogical beliefs increased in the post-test, indicating that preservice teachers made some progress after online training. The results suggested the feasibility of short self-accessible online training in improving preservice teachers' self-efficacy and pedagogical beliefs in China. However, the missing concepts related to reflective teaching in reflective logs revealed a lack of reflection. The results suggested the importance of improving preservice teachers' in-depth reflections to enhance their self-efficacy and pedagogical beliefs. Accordingly, the research design in Study 3 was further improved.

Chapter 4. Short Self-accessible Online Training for Improving

Professional Learning of Preservice Teachers (Study 3 and Study 4)

Section 4.1. The Effects of Short Self-accessible Online Training on the Self-efficacy, Pedagogical Beliefs, Pedagogical Knowledge, and Reflection Depths of Preservice Teachers (Study 3)

In-depth reflection skills support preservice teachers to produce meaningful practice and enhance their teaching confidence and beliefs in implementing pedagogical approaches (Sheridan, 2016). Reflection depth that reveals reflection skills and PK mastery would substantially support preservice teachers in reinforcing their self-efficacy and pedagogical beliefs. Study 3 aimed to examine the effects of short self-accessible online training on the self-efficacy, pedagogical beliefs, PK, and reflection depths of preservice teachers in China.

Ninety-four preservice teachers in a teacher education university in northern China were recruited in this study. The participants were randomly divided into two experimental groups that differed in the training sequence (i.e., the RT-CO Group and

the CO-RT Group) and one control group without training. Some improvement was made to the online training materials based on the limitations of Study 2. For example, in reflective teaching training, a figure showing the process of reflective teaching was added for preservice teachers to learn how to make evidence-based reflections.

The participants in two experimental groups went through online training, wrote reflective logs, and filled out two questionnaires the same way as in Study 2. However, they were asked to finish online training within two weeks before student teaching due to the COVID-19 pandemic. Although the participants in the Control Group did not participate in online training, they were asked to write reflective logs in the same order as the RT-CO Group. And they were also asked to simultaneously fill out both questionnaires with other peers. After student teaching, all participants were conducted to join semi-structured focus group interviews to share their perceptions and experiences in student teaching.

Repeated measures ANOVA was conducted to investigate the changes in self-efficacy and pedagogical beliefs over time. Thematic analysis (Braun & Clarke, 2006) and chi-square tests were adopted to analyze preservice teachers' reflective logs to examine their reflection depths. Then, the top two participants with rapid growth in self-efficacy and pedagogical beliefs were selected using descriptive statistics, and their reflective logs and interview dialogues were analyzed with the Steps for Coding and Theorization (SCAT) analysis (Otani, 2008) to explore how their efficacy beliefs and PK improved during the online training.

Study 3 investigated the beneficial effects of short self-accessible online training on improving preservice teachers' self-efficacy, pedagogical beliefs, PK, and reflection depths. The results suggested that different reflection tasks and training

sequences also mattered. However, the results did not show significant interaction effects between group and time in terms of self-efficacy and pedagogical beliefs and a lack of reflection depths despite online training.

Through the analysis in Study 3, the author identified that preservice teachers with deep reflections showed potential attributes of emergent teacher leadership that would develop their efficacy beliefs. Therefore, Study 4 was conducted to explore the potential attributes of emergent teacher leadership among preservice teachers in China.

Section 4.2. A Pilot Study in Exploring Emergent Teacher Leadership of Preservice Teachers (Study 4)

Deep reflections on teaching practice would make preservice teachers effective in the classroom; consequently, it would help them expand their ability and responsibility to influence other colleagues beyond the classroom (Collinson, 2012; Carver, 2016), which is a key feature of teacher leadership. Fostering the capacity of emergent teacher leadership would boost preservice teachers' teaching confidence and encourage them to influence other peers by promoting deep reflections. Study 4 aimed to identify the potential attributes of emergent teacher leadership among preservice teachers with higher-level reflections in China.

Based on reflection depths, nine best-scored preservice teachers were selected as the target respondents using descriptive statistics. And then, thematic analysis (Braun & Clarke, 2006) was adopted to analyze reflective logs and interview dialogues of these nine preservice teachers.

Five potential attributes of emergent teacher leadership were identified: *in-depth reflections on teaching practice, collaborative learning in teams, beliefs in*

the teacher's roles, teaching efficacy in an individual subject, and the teacher-student relationship. According to the results, a developmental model that emphasizes the role of in-depth reflection is proposed to motivate preservice teachers to build strong efficacy beliefs and ultimately develop emergent teacher leadership, especially in China.

While the findings in Study 4 demonstrated that profound reflection skills are essential in improving preservice teachers' efficacy beliefs, the results in Study 3 showed that their self-efficacy and pedagogical beliefs did not significantly change. Study 5 was conducted to enhance preservice teachers' self-efficacy and pedagogical beliefs by providing a more specific online training module.

Chapter 5. The Effects of Short Online Training Workshops on the Self-efficacy and Pedagogical Beliefs of Preservice Teachers (Study 5)

While individual reflection has been emphasized in preservice teacher education, collaborative learning plays a vital role in promoting preservice teachers' engagement and developing their critical thinking skills in online lessons (Moorhouse et al., 2023; Prieto et al., 2020). Study 5 aimed to examine whether preservice teachers' self-efficacy and pedagogical beliefs can be improved through short online training workshops in Japan.

This study recruited 155 sophomore preservice teachers from a university in western Japan. Two synchronous online training workshops were conducted in this study on two topics: reflective teaching and classroom observation. The materials of online training workshops were modified to emphasize enhancing preservice teachers' self-efficacy and pedagogical beliefs according to the Japanese educational context. For instance, since lesson study is a unique way of classroom observation in Japan, two

video clips of lesson study showing how teachers get support from lesson study and its application in other countries were added to encourage and inspire preservice teachers to shape positive self-efficacy and pedagogical beliefs. Reflection task 4 was changed to provide a lesson video of a Japanese teacher to promote reflective learning among Japanese preservice teachers.

The participants first took a reflective teaching training workshop and then a classroom observation training workshop, once a week. Four reflection tasks were adopted as classroom activities to improve preservice teachers' engagement during online training workshops. And they were asked to discuss their perspectives in groups during online training workshops. Based on the valid data from forty-seven preservice teachers, paired *t*-tests and the Kawakita Jiro (KJ) method (Kawakita, 1967) were used to explore whether and how preservice teachers' self-efficacy and pedagogical beliefs changed during the online training workshops.

The results demonstrated that short online training workshops improved preservice teachers' self-efficacy and pedagogical beliefs by helping them develop in-depth reflection skills. The results implied that the learning experiences in the preservice teacher education period strongly support preservice teachers to shape positive self-efficacy. The results suggested the importance of an effective instructional design with reflection and collaborative learning elements for short online training in developing preservice teachers' self-efficacy and pedagogical beliefs.

Chapter 6. Conclusion

This dissertation consists of five associated studies that investigated the favorable effects of short online reflection training on preservice teachers'

self-efficacy and pedagogical beliefs during the preservice teacher education stage. The findings provided proof of the feasibility of conducting short online reflection training in Japan and China.

The theoretical framework proposed in this dissertation contributes to nurturing positive self-efficacy and pedagogical beliefs in preservice teachers by developing their reflection skills through short online training. This dissertation contributes to the research in non-Western preservice teacher training and teacher education, especially in East Asia. The findings of this dissertation shed light on the instructional design of online preservice teacher training programs to support preservice teachers in shaping positive self-efficacy and pedagogical beliefs, thus preparing them for challenging situations in their future teaching careers.

There are still some limitations in the research so far. First, the topics and tasks provided to preservice teachers in short online training were limited. Future studies will provide various topics and activities to stimulate preservice teachers' learning interests and autonomy. Second, this dissertation did not evaluate preservice teachers' teaching performance in student teaching. Future studies will assess their teaching practice and explore its effects on self-efficacy and pedagogical beliefs. Moreover, the COVID-19 pandemic has hindered this research in various ways. Some alternatives would be made for the contingencies in future studies.

III. Main References

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