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Investigating Student Teachers' Reflections on Early Field Experiences

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Abstract

The purposes of the research were to (1) study the quality of reflections among student teachers in the categories of self-reflection and peer feedback and (2) compare the level of reflection between groups of teachers with less and more teaching experience. The sample consisted of 112 general science student teachers. An analytical framework of reflection quality in this study contained the topic of reflection and depth of reflection. The topic of reflection focused on five dimensions including: 1) teaching and learning strategies, 2) teacher's appearance, 3) student's experience, 4) learning achievement, and 5) pedagogical practice. The depth of reflection was categorized into 4 levels involving level one: description, level two: explanation, level three: insightful comment, and level four: recognized good practice. Data was collected from the reflection journals of the student teachers' early field teaching experiences then analyzed by scoring reflective journals. The results indicated that the overall reflections were in level three: 'Insightful Comment' in both categories. In terms of student's experience, and learning achievement were in level two 'Explanation'. In comparison to student teachers' reflections among the experience related to learning design, there was no significant difference between overall self-reflection and peer feedback. Some aspects were statistically significant, *i.e.*, the student's experience, and learning achievement between the group of less and more experience in learning design respectively. The findings showed the impact of experience on the reflections in student teachers. The study highlighted the implications of reflective practice for teacher education programs, science teacher

education and research.

Keywords: Student teacher, Reflection, Self-reflection, Peer feedback, Reflective quality

1. Introduction

1.1 Introduce the Problem

Reflection is very crucial in professional development since it is an intellectual process aimed at investigating one's own practice in a given situation and involves a review of the experience, an analysis of causes and effects, and the process of continuous adaptation and learning (Van, 2008). Moreover, in terms of teacher education, the reflection can act as a means of self-assessment of the teacher that involves going over what has occurred in a particular lesson in an effort to encourage their own proficiency development (Moon, 2004; Shulman, 1987). As a result, reflection is considered an essential practice for teaching professionals. According to Burbank, Ramirez, and Bates (2012), reflective thinking allows for a paradigm shift from viewing problems as drawbacks to perceiving them as a chance to self-reflect. Therefore, reflection acts as a link between observations, experiences, and decision-making in teaching practice. Reflection promotes teaching professionality as it encourages teachers to recognize and criticize gaps in their own knowledge and practices, thus finding their own learning needs to fulfill the gaps. To have a faster professionality growth rate, student teachers should work on skills of becoming a reflective practice person to support them in terms of knowledge and pedagogy context in the real situation of the future.

Several researchers concur that reflection needs interaction with others as a community (Boud, 1999; Dewey, 1933; Hammersley-Fletcher & Orsmond, 2005; Moon, 1999; Procee, 2006; Thorpe, 2000). Literature indicates that feedback empowers individuals to share and learn from other perspectives on experiences and ideas and develop their own perspectives further. Moreover, peer feedback can support the teacher moving beyond the evaluation and explanation of an experience to considering alternatives. It not only can create alternative solutions but can also aid reaching a good decision. Therefore, the reflective practice should include self-reflection and peer feedback with so-called 'collaborative reflection'. Based on the aforementioned reasons, there is no doubt that collaborative reflection is a powerful tool for teacher development (Courtney, Abbott, & Harris, 2004). Further, teacher education programs should introduce a collaborative reflection process to student teachers.

Preservice teacher's limited experience gives rise to numerous issues in their student teaching. There are numerous studies on how preservice teachers struggle during their practicum period (Eick & Dias, 2005; Ho & Toh, 2000; Watzke, 2007). Preservice teachers depend heavily on knowledge gained from their college level teaching method courses and what they encountered as students in their respective schools due to a lacking of pedagogical knowledge and teaching experience (Eick & Dias, 2005). Watzke (2007) supports that novice teachers primarily refer to their own experiences as a learner to determine their classroom practices and expect students to act like they did, but as their classroom experiences grow, they become less controlling of the students. According to Goldberg, Schwerter, Seidel, Müller, and

Stürmer (2021) preservice teachers focus more on active students than on less active students. Furthermore, preservice teachers tend to interpret what happens in the classroom based on what they have seen rather than engage in critical thinking. In addition, they usually interpret student behaviors such as raising hands or concentrating on given tasks as students having understood the lesson (Barnhatt & van Es, 2015). Therefore, the information they gain is very superficial and not sufficient to draw accurate conclusions about how student learning and understanding. To develop professionally, preservice teachers need to become more reflective teachers in the classroom. Student teachers must be trained early on to master applying solutions in classroom settings as well as learning from their implementations to continue improving their teaching (Choy, Leong, & Yom, 2017). Barnhatt and van Es (2015) also suggest that preservice teachers should develop reflective thinking skills as teacher education programs cannot provide all the specific knowledge they need to become professional teachers due to program time limits.

Currently, most universities in Thailand provide both four-year and five-year Bachelor of Education programs. Mahasarakham University offers two programs likewise, five-year Bachelor of General Science Education (revised A.D. 2017) and four-year Bachelor of General Science Education (revised A.D. 2019). In the four-year program, prospective teachers only earn 38 credits in teaching profession subjects which is considered as a “less teaching experience” group. On the other hand, student teachers in the five-year program must earn 54 credits in teaching profession subjects and are considered the “more teaching experience” group. The four-year program students have less chance to practice teaching due to less credit hours in teaching subjects than the students in the five-year program. While there are many studies that explore reflection in preservice teachers there is, however, no notable research on parallel teacher education programs which were conducted under similar learning environment settings, *e.g.*, instructor, learning material, and practicum site. The purposes of this research were to (1) study the quality of reflection among the student teachers in the categories of self-reflection and peer feedback and (2) to compare reflective levels between less and more teaching experience groups. The following research questions guide this investigation:

(1) What is the reflective quality of the general science student teachers in early field teaching experiences?

(2) To what extent does teaching experience influence the reflective quality of teachers among the two teacher education programs?

The findings will benefit educators who are interested in reflection of student teachers. Knowledge obtained from this research can be applied to improve teacher development in Thailand and throughout the academic world.

2. Method

This study employed the survey method to investigate the reflection of science student teachers. The details can be described as follows.

2.1 Participants

The study sample consisted of the 112 general science student teachers in the Faculty of Education, Mahasarakham University, Thailand. The cluster random sampling technique was used to select the sample group. In addition, learning design experience referred to the experience level which was prior knowledge of the relevant learning design that the student teachers gained from their previous professional courses and their experience completing the activities assigned in the courses. This study was conducted through the curriculum and course specification analysis, which was classified according to professional courses related to implementing the design of learning activities including field experience. The sample was distributed into two groups depending on the experience in learning design. Group1: 'less teaching experience' consisted of 58 third-year student teachers in the General Science program (revised A.D. 2019). Group 2: 'more teaching experience' consisted of 54 fourth-year student teachers in the General Science program (revised A.D. 2017).

2.2 Instrument

Semi-structured reflection journals were used for collecting data. Guideline questions were used in the reflection journal (*i.e.*, What did I learn/feel from this lesson? How should I do in the future?). The reflective journal was scored by a rubric score framework adapted from Ono et al. (2013). The scoring rubric was categorized by 5 aspects depending on the topic of reflection each aspect was divided into 4-point scale following the dimension of depth of reflection (more detail in next section). The score obtained from the reflective journal was formulated to define the level of reflection. The content validity and the appropriateness of the journal and scoring rubric was examined. The results were 1.00 and 4.89 respectively which was relevant to optimal level. In this study, the collaborative reflection was implemented for the student teachers. The researchers analyzed written self-reflections and peer feedback accounts collected in the context where the student teachers carried out teaching reflection journals in a course related to teaching practices.

Most of the studies reviewed related to reflection in teacher education measure the reflective quality in two metaphors that include broadening and deepening (Ketsing et al., 2020; Lane et al., 2014; Leijen et al., 2012; Meyers, 2012; Ono et al., 2013). The breadth of reflection was established on a sociological approach. This dimension was an extension of the teacher's concerns. The reflection referred to as the focus, domain, or type of reflection which was the so-called "content reflection" (Lane et al., 2014). Moreover, many studies mention the topic of reflection which determine the reflective quality on the overall experiences of those engaged in the reflection. Meanwhile, the depth of reflection was constructed as a psychological approach which was relevant to the depth of the thinking process which was the so-called "level of reflection". In this study, both topics of reflection and depth of reflection were mixed and carried out. As a result, the reflective quality framework which was examined in this study focused on five dimensions of topic of reflection involved:

Aspect 1: 'Teaching and Learning Strategy' relates to teaching and learning strategies, instructional techniques, and practices.

Aspect 2: 'Teacher's appearance' relates to the teacher behaviour, teacher characteristics including the communication skills of teacher in the classroom.

Aspect 3: 'Student's experience' relates to the student learning experience, student behaviour, including the interaction of the students in the classroom.

Aspect 4: 'Learning achievement' relates to the achievement of lesson and curriculum goals (*e.g.*, thinking skills, competency, conceptual understanding); inconsistency with objectives.

Aspect 5: 'Pedagogical practice' relates to content delivery, classroom management, planning, use of materials, classroom interaction, and teaching aids in the lesson.

Additionally, the depth of reflection was categorized with four levels:

Level one 'Description' referred to segments where brief or vague comments in the classroom were described with no discernable reflection.

Level two 'Explanation' was a segment in which descriptions and comments with reasons or possible causes of the classroom situation were provided.

Level three 'Insightful Comment' was a comment which covers a justification, significance, or a concrete suggestion which could be action oriented.

Level four 'Recognized a Good Practice' was a segment for comments and suggestions which recognized good practices, related to overall curriculum goals, or teaching and learning theories.

The framework of the reflective quality in this study is shown in the figure 1 below.

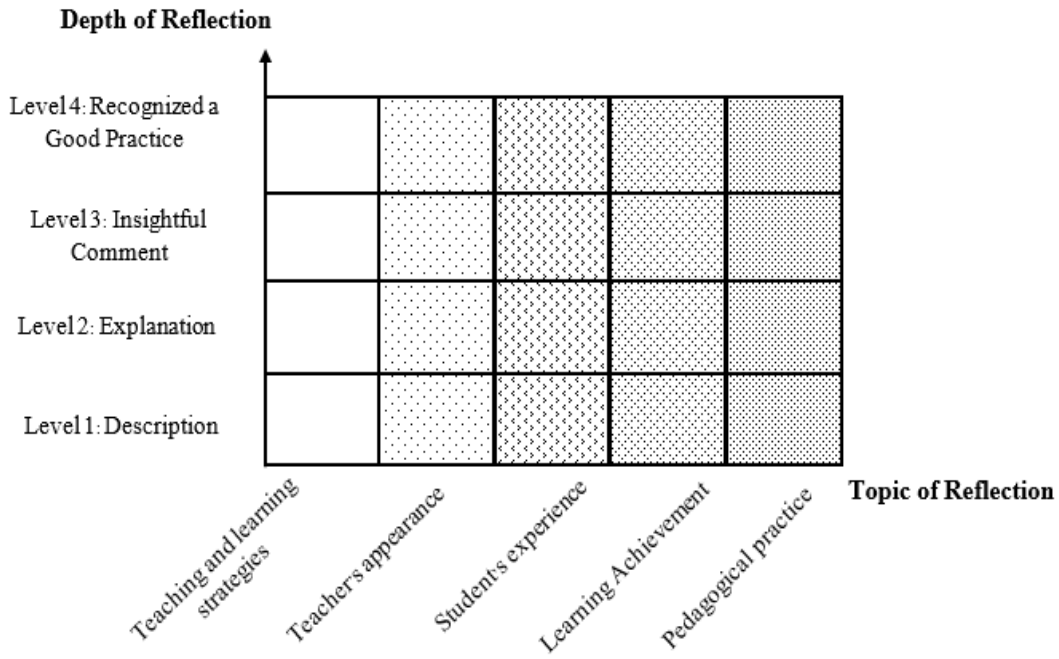

Figure 1. The dimension of reflective quality

2.3 Data Collection and Analysis

Reflection journals were used to track the student teachers' reflections on their teaching experience. The student teachers were assigned to work in pairs in the classroom (teaching and observing their peer). Each student teacher was asked to write a reflection journal by themselves after completing their own planned activities in the classroom. The self-reflection was requested for the implementing or teaching person while the peer feedback was allocated for observing person. The analytical procedure started with the author and co-author reading the data several times to get a sense of the data and divide the data into segments. The researchers separately read and re-read the data to assign segments relevant to the dimension of reflective quality framework and relevant to the scoring rubric of reflection level. After that, the segments and categories were shared and discussed for making a consensus of what should be included in each topic of reflection and scoring for depth of reflection.

Descriptive statistics were used for computing mean and standard deviation of all items and interpreting the depth of reflection to four levels following the criteria as follows:

Mean Score	Depth of Reflection
3.01-4.00/15.01-20.00	Level four: Recognized a Good Practice
2.01-3.00/10.01-15.00	Level three: Insightful Comment
1.01-2.00/5.01-10.00	Level two: Explanation
0.00-1.00/0.00-5.00	Level one: Description

Moreover, the t-test for independent sample was used to determine whether group 1 and group 2 had statistical evidence that the reflection means were significantly different.

3. Results

3.1 Student Teachers' Reflection Level

Descriptive statistics (*e.g.*, means, standard deviations) and the reflection level of the preservice teachers in overall and each categorizes are presented in Table 1.

Table 1. Levels of reflection of general science student teachers

Reflection	Category	N	total	$\overline{X}$	S.D.	Depth of Reflection
Aspect 1: Teaching and learning strategies	Self-Reflection	112	4	2.47	0.95	Level three: Insightful Comment
	Peer Feedback	112	4	2.28	0.81	Level three: Insightful Comment
Aspect 2: Teacher's appearance	Self-Reflection	112	4	2.23	0.84	Level three: Insightful Comment
	Peer Feedback	112	4	2.16	0.85	Level three: Insightful Comment
Aspect 3: Student's experience	Self-Reflection	112	4	1.47	0.93	Level two: Explanation
	Peer Feedback	112	4	1.25	0.87	Level two: Explanation
Aspect 4: Learning achievement	Self-Reflection	112	4	1.87	1.05	Level two: Explanation
	Peer Feedback	112	4	1.74	1.13	Level two: Explanation
Aspect 5: Pedagogical practice	Self-Reflection	112	4	2.77	0.79	Level three: Insightful Comment
	Peer Feedback	112	4	2.52	0.78	Level three: Insightful Comment
Reflection	Self-Reflection	112	20	11.59	2.16	Level three : Insightful Comment
	Peer Feedback	112	20	10.76	2.26	Level three: Insightful Comment

Overall, the student teachers were in the level three insightful comment, both self-reflection and peer feedback (mean = 11.59, 10.76 respectively).

There was similarity, considering each aspect of both self-reflection and peer feedback. In the aspect of teaching and learning strategies; teacher's appearance; and pedagogical practice were in the level three: insightful comment. Meanwhile, aspect of student's experience; and learning achievement were in level two: explanation.

3.2 Comparison of Student Teachers' Reflection among the Experience Related Learning Design

The t-test result indicated that there was no statistically significant difference in either self-reflection or peer feedback (Table 2). The mean score of the self-reflection of the student teachers with less experience in learning design was 11.10 while the score of the group with more experience was 12.11 which were on the level three: insightful comment. Meanwhile, the 10.60 and 10.92 were the mean score of peer feedback of the groups with less and more experience in learning design respectively and there were also on the level three: insightful comment.

Table 2. The comparison of the student teachers' reflection between the group of less and more learning design experience

Reflection	Group	N	total	$\overline{X}$	Depth of reflection	S.D.	t	p
Self-Reflection	Group 1	58	20	11.10	level 3	2.84	3.077	.082
	Group 2	54	20	12.11	level 3	2.39		
Peer Feedback	Group 1	58	20	10.60	level 3	2.27	0.282	0.597
	Group 2	54	20	10.92	level 3	2.32		

The categories of self-reflection were also analyzed. It was found that the difference was statistically significant in some criteria (Table 3). There was a difference with statistical significance ($p < .05$) in the aspect of student's experience, and the aspect of learning achievement. In the aspect of student's experience, the mean scores were 1.37 and 1.55 of the group of less and more experience in learning design respectively. On the other hand, 1.58 and 2.14 were the mean scores of the aspect of learning achievement respectively. Apart from this (aspect 1: teaching and learning strategies; aspect 2: teacher's appearance; and aspect 5: pedagogical practice), there was no statistically significant difference.

Table 3. The comparison of self-reflection in each aspect between the group of less and more experience in learning design

Self-Reflection	Group	N	total	$\overline{X}$	S.D.	t	p
Aspect 1: Teaching and learning strategies	Group 1	58	5	2.16	0.85	1.207	0.274
	Group 2	54	5	2.59	0.76		
Aspect 2: Teacher's appearance	Group 1	58	5	2.24	0.84	0.001	0.974
	Group 2	54	5	2.22	0.86		
Aspect 3: Student's experience	Group 1	58	5	1.37	1.36	5.412*	0.022
	Group 2	54	5	1.55	0.84		
Aspect 4: Learning achievement	Group 1	58	5	1.58	1.21	23.075*	0.000
	Group 2	54	5	2.14	0.78		
Aspect 5: Pedagogical practice	Group 1	58	5	2.75	0.82	0.042	0.837
	Group 2	54	5	2.77	0.76		

Note. * $p < .05$.

Additionally, the categories of peer feedback were also analyzed. It was found that all the aspects had zero statistically significant difference (Table 4).

Table 4. The comparison of peer feedback in each aspect between the group with less and more experience in learning design

Peer feedback	Group	N	total	$\overline{X}$	S.D.	t	p
Aspect 1: Teaching and learning strategies	Group 1	58	5	2.38	0.79	0.573	0.465
	Group 2	54	5	2.18	0.82		
Aspect 2: Teacher's appearance	Group 1	58	5	2.12	0.88	0.081	0.777
	Group 2	54	5	2.20	0.83		
Aspect 3: Student's experience	Group 1	58	5	1.84	0.89	0.904	0.344
	Group 2	54	5	2.25	0.80		
Aspect 4: Learning achievement	Group 1	58	5	1.77	1.22	2.934	0.90
	Group 2	54	5	1.70	1.03		
Aspect 5: Pedagogical practice	Group 1	58	5	2.48	0.73	1.899	0.171
	Group 2	54	5	2.57	0.86		

4. Discussion

This study about student teachers' reflections revealed that either self-reflection or peer feedback categories were considered in level three: insightful comment. The student teachers developed an understanding of what happened during the teaching practice. They were able to explain what happened in the classroom, both successful and challenging experiences, as well as giving a suggestion. However, when looked closely in each aspect; there were two aspects including learning achievement and student's experience were in level two: explanation. It showed that the student teachers reflected on their practice of teaching from first-hand experience without interpreting first. An interesting point across these two aspects might be a result from a strong impact on their practice which was their prior knowledge as students in school and university. According to the data, it appears that the student teachers own prior experiences as school students had a major impact on how they reflected about teaching and learning. Because they usually encounter traditional teacher-centered style approaches in their own learning in their study years, they maintained and reproduced those experiences in their own practice. This finding supports Loties's (1975), notion of an "apprenticeship of observation", in that teachers tend to teach the way they were taught when they were students. In addition, the student teachers showed their reflection ability, particularly; the way they discussed general pedagogical knowledge, but they did not show the explicit critical reflection in their practice. This finding was in parallel with Hindrasti

(2020) who studied preservice teachers and pointed out that student teachers had a limited ability to engage in metacognition of their reflections and critical reflections. Normally, they for the most part duplicated the teaching methods and strategies they practiced when they studied their methods courses. Although the education method subjects at the university provided them a large selection of teaching methods, the student teachers did not mention this variety when it came to teaching suggestion or recommendation for further lessons to themselves or their peers. Hughes (2005) stressed the view that beginning teachers coped with classroom management and surviving daily class routine, as a result, they gave up their enthusiasm to investigate curriculum, content, or other interesting teaching methods. According to the result, it showed that the prospective teachers had numerous thoughts about teaching methods and content but could not put them into practice.

When comparing categories of self-reflection between groups of student teachers with more and less teaching experience, there were significant differences in two aspects, *i.e.*, the aspect of student's experience, and the aspect of learning achievement. The more teaching experience group tended to have a higher mean score. This indicated experience played the major role in reflection. Melville, Fazio, Bartley, and Jones (2008) expressed that the combination of experiences from preservice teaching courses, a willingness and capacity to reflect helped preservice teachers to discuss the deeper pedagogical issues of teaching and learning. These issues aided the student teachers having a limited teaching experience, refrained them from viewing what happen in the classroom from multiple perspective, let alone critical reflection on themselves or their peers. Cultural influences of Thailand might be the main reason to this reluctance. Student teachers were hesitant to discuss their practice and especially their friend's teaching openly with their peers, especially when it came to a sensitive issue such as commenting on their peers' weak points. They tended to give a general suggestion rather than discussing the problem in detail or expressing opinions. Hence, the cultural influences on the preservice teacher's reflection need a future investigation. In addition, reflective practice should be included in teaching courses in order to change these beliefs and work culture.

5. Conclusions

The implications of this finding are that it is necessary for teacher education programs to reassure preservice teachers to reflect upon and understand the significance of their practice teaching experiences. Thus, the lectures especially in education subjects should give opportunity to student teachers to reflect upon their experience when they were students at the early year of teacher education and about their teaching experience when they continue their teacher program. The issues and misconception require be made public, addressed, and understood at the beginning of their teacher education programs. Dewey (1963) claimed that experience was not like cognition which can be constructed by oneself; therefore, it would not initiate reflection without help from the teacher in order to derive meaning from their experience. The education program should integrate reflective practice throughout the program and should help student teachers realize the connection between prior experiences and new knowledge they gain during their university years. It is strongly recommended that the university course employ reflective practices both reflection-in-action and

reflection-on-action in teacher education programs. According to Schön (1983), reflection-in-action means observing and reflecting as they are occurring while reflection-on-action is a reflection on past experience. The need an effective role model to learn from to become a critical reflective thinker which is one of importance characters of a qualified teacher.

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