



Reflective thinking and teaching practices: A study on pre-service teachers' perceptions and improvement of reflection in the curriculum development course

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Abstract

The current study aimed to investigate the Curriculum Development Course knowledge levels of pre-service teachers and the depth of their reflections according to the framework proposed by Kember et al. (2000). In this explanatory mixed-method research study, pre-service teachers who enrolled in the Elementary Education-Classroom Teaching Department in two state universities of Turkey were included. The data collected through an achievement test, a reflective thinking scale, and a reflective writing form were analyzed using both descriptive and inferential statistical analysis techniques. Also, the writings of pre-service teachers were analyzed according to Hatton and Smith's (1995) framework. The results showed that taking Curriculum Development Course enriched with reflective writing activities increased pre-service teacher's course knowledge and resulted in significantly higher reflection levels in some dimensions of reflective thinking. However, there was scarcity in the number of dialogical and critical reflections. The findings were discussed and some recommendations for researchers were proposed.

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Keywords: Curriculum development course, journal writing, pre-service teachers, reflective thinking

1. Introduction

The goal of any teacher education curriculum is to develop the quality of teachers so that they would know how to use standards to support student learning by examining personal beliefs, assumptions and attitudes about teaching and learning against the professional, cultural and political contexts of education through reflection (Shoffner, 2009). Dewey (1933) argued that theoretical knowledge and practice should be combined through reflection for an effective teaching-learning process. Similarly, Lin, Hmelo, Kinzer, and Secules (1999) stated the ability of reflective thinking as the basis of success in increasingly changing society to make sense of knowledge and to adapt it flexibly to new situations besides reading, writing, and arithmetic. In this context, numerous

commissions, boards, states, and local school districts have identified reflection as a standard, which all quality teachers should have (Rodgers, 2002). In addition, the School-Based Professional Development Model guide published by the Ministry of National Education in Turkey included different reflective thinking activities for teachers to constantly review their school practices and develop their professional knowledge and skills (MONE, 2010).

1.1. Reflective Thinking

Dewey (1993) is acknowledged as a key originator of the concept of reflection. According to him, reflection should be problem-centered and while solutions are sought to problems, cultural, historical, and political values or beliefs should also be taken into account. His definition of reflection (1933: p. 9) has been widely accepted by educators. Reflection is active, persistent, and systematic thinking about any belief. Similarly, Hatton and Smith (1995) defined reflection as “deliberate thinking about action with a view to improvement” (p. 39). Based on these definitions, reflection supports teachers to investigate their practices, behaviors, and attitudes which impede or enhance student achievement thoughtfully and deliberately. In this way, reflective teachers can solve a variety of personal and professional problems.

It was stated that the majority of the events that occur in classrooms cannot be predicted and if teachers are not reflective, they are in danger of perceiving these classes as beyond their control (Poom-Valickis & Mathews, 2013). Choy, Yim, and Tan (2017) stated that self-efficacy, self-assessment, and teaching awareness had a significant relationship with reflective thinking. For these reasons, professionals need to step back and reflect on how they decided and solved the problems they encountered in their practices, the influence of their actions on learners, and think on the ways to improve them by asking the advice of other professionals if necessary. If teachers are reflective at higher levels, they mostly have high self-efficacy, aware of their duties as professionals, and use self-assessment strategies to improve themselves in their professional lives. Gelter (2003) stated that reflective thinking is a skill that can be developed, and it needs to be taught. Hence, this study aimed to investigate the reflection levels of pre-service teachers through reflective writing activities.

In many studies, different approaches were employed to foster reflection such as journal writing (Hramiak, Boultonb, & Irwin, 2009; Ho & Richards, 1993; Namvar, Naderi, Shariatmadari, & Seifnaraghi, 2009; Sanal-Erginel, 2006; Thorpe, 2004; Yang, 2009), use of critical incidents (Griffin, 2003), electronic portfolio (Robichaux & Guarino, 2012), use of cases (Poom-Valickis & Mathews, 2013), videotaped teaching scenarios followed by discussions (Hewitt, Pedretti, Bencze, Vaillancourt, & Yoon, 2003), online case discussions (Levin, He, & Robbins, 2006) and the use of critical friend dyads (Hatton & Smith, 1995).

In pre-service teacher education, reflective journal writing practices were especially preferred (Cohen-Sayag, & Fischl, 2012; Fox, Dodman, & Holincheck, 2019; Griffin, 2003; Hramiak et al., 2009; Namvar et al., 2009; Sanal-Erginel, 2006; Thorpe, 2004; Yang, 2009). In this way, pre-service teachers obtained the chance to think on their experiences, such as “Which activities were effective?”, “Why did I include this activity?”, “What would I change, if I taught this subject again?”, “Are my feelings positive about this experience?”, “Why students seem bored?” (Griffin, 2003). By asking these kinds of questions, they critically think about various classroom issues and events besides their feelings like discomfort, curiosity, or excitement. In this way, they gain insights about themselves, their interaction with students, and their classroom practices before they teach in real classes by themselves (Thorpe, 2004).

The reflection levels of pre-service teachers were assessed according to different frameworks to measure their depth of reflective thinking such as Hatton and Smith (1995), Ho and Richards (1993), Valli (1997), and the work of Mezirow (1991, cited in Kember et al., 2000). In the current study, the reflections of pre-service teachers were underpinned by the frameworks suggested by Kember et al. (2000) and Hatton and Smith (1995).

Kember et al. (2000) explained the reflective thinking framework in four dimensions. According to this schema, the “habitual actions” is the first category includes the activities which are conducted without being aware of them and without thinking on them after some repetitions, and the “understanding level”, the second category, in which people use the knowledge intentionally but do not assess the value of that knowledge and do not reflect upon the significance of that knowledge in personal or practical situations (Kember et al., 2000). For these reasons, learning does not change, and it remains limited to pre-existing meaning, schemas, and perspectives. However, in the “reflection level”, the third category, and in the last stage, “critical reflection” new meaning is created through experience and prior knowledge and the conceptual perspective is changed, which results in learning.

Moreover, Hatton and Smith (1995) also proposed a different framework including four-level criteria for reflection. The strength of Hatton and Smith’s (1995) framework is that it is easy to evaluate people’s reflection levels thanks to providing specific characteristics of reflective writing. Moreover, it guides practitioners to think and go forward to write at higher levels. Hatton and Smith’s (1995) framework was stated as providing a suitable framework for coding the level of reflection and had been previously used in different studies (Ayan, 2010; Moussa-Inaty, 2015; Poom-Valickis, & Mathews, 2013). According to them, the “descriptive writing category” does not include reflection, but only involves the reporting of events that happened in class. In the “descriptive reflection category”, pre-service teachers try to express reasons for practices or events, but they are mostly based on their judgment or their theoretical knowledge learned in-

class courses. In the “dialogic reflection category”, pre-service teachers engage in a discourse with themselves to explore possible reasons for problems. In the “critical reflection category”, pre-service teachers express reasons for their practices by taking the historical, social, and political contexts into account during the reasoning process.

In Turkey, it has been observed that studies mostly investigated pre-service teachers’ level of reflection according to different variables such as gender, department, etc. through the use of a scale (Akar, 2019; Gocuk, 2018), or the relationship between reflection and other variables such as critical thinking (Gocuk, 2018), decision-making styles (Akar, 2019), etc. However, there are limited studies that investigate the depth of pre-service teachers’ reflections and the contribution of reflective activities such as journal writing, electronic portfolio, blog writing, peer reflections, etc. on self-directed learning (Ayan, 2010), reflective thinking levels (Cigdem, 2012), self-awareness towards their teaching, and professional identity development (Şanal-Erginel, 2006).

In addition, Moon (2004) stated that while deep learning requires reflection, surface-level learning stems from the lack of reflection. Similarly, Sparks-Langer, Simmons, Pasch, Colton, and Starko (1990) explained that if the course achievement scores of students are lower, then they have more difficulty in applying the course concepts and principles than students who have higher achievement scores. As a result, it can be concluded that the performance levels of learners is influenced by their knowledge levels and whether they involve reflective thinking or not. As also stated by Dewey (1933) that learning must be realized first and then, pre-service teachers should be able to transform what they have learned into their practices for reflection. For this reason, in the current study, gaining knowledge was considered important for developing skills necessary to think reflectively, and thus knowledge levels of pre-service teachers were checked. As the use of reflective thinking activities in courses develop critical thinking, increase learning, and improve the reflective thinking skills of the learners (Chirema, 2007; Griffin, 2003; Fox et al., 2019; Shoffner, 2009), the course knowledge levels of pre-service teachers, and the depth of their reflections was thought important to be investigated. With this aim, the following research questions were proposed:

1. Is there a significant difference between pre-service teachers' knowledge levels in terms of comparing the ones who took the Curriculum Development Course in the last semester and those who did not?
2. Is there a significant difference between the reflective thinking levels of pre-service teachers who took the Curriculum Development Course in the last semester and those who did not?
3. In what categories do pre-service teachers who took the Curriculum Development Course in the last semester reflect according to Hatton and Smith’s (1995) framework?

2. Method

This study employed an explanatory mixed-method research design (Creswell, 2012; Fraenkel & Wallen, 2009). In the first stage, quantitative data were collected and analyzed. In the quantitative part of the study, a causal-comparative research design was employed. According to causal-comparative research, the causes or consequences of differences that have already existed between or among groups of individuals are investigated (Fraenkel & Wallen, 2009). Pre-service teachers who were in the ‘Group 1’ have not studied the topics of Curriculum Development Course through other Educational Sciences courses and took the elective type Curriculum Development Course at the final semester which was designed to support reflective thinking. This course includes topics such as writing appropriate course objectives, organizing course content, teaching-learning activities, and evaluation process, which are the important elements of the curriculum and included in preparing lesson plans. Pre-service teachers apply theoretical knowledge in their school practices and the more they reflected on these topics, the more they improved the quality of the instruction. For this reason, the involvement of reflective activities in the Curriculum Development course was acknowledged as important. On the other hand, pre-service teachers, who were in the ‘Group 2’, learned the content of the course through taking other Educational Sciences courses from the beginning of their training until the last semester. In Turkey, the curriculum of some universities included the topic of Curriculum Development Course in other Educational Sciences courses. For instance, some universities taught the planning of instruction, type of plans, designing goals and objectives of a curriculum, Blooms’ taxonomy, content organization, evaluation, etc. topics in Principles and Methods of Instruction course in a very limited time besides the topics of Principles and Methods of Instruction course. Through this causal-comparative research, course knowledge and reflection levels of these two intact groups were investigated.

While quantitative data were collected through an achievement test and a scale, qualitative data were gathered through weekly reflective writings. According to explanatory mixed-method research, after conducting deep analyses of qualitative data, these results were used to identify patterns and themes as a means to explain and better understand the quantitative findings (Creswell, 2012). For this reason, the weekly reflective writings of pre-service teachers were analyzed according to Hatton and Smiths’ (1995) reflective writing pattern to investigate the reflection levels of pre-service teachers.

2.1. Context

The current study was conducted at two public universities located in the Aegean Region in Turkey. The university which involved participants of Group 2 is located in one of the biggest city of Turkey and the university which involved participants of Group 1, is located in a nearby city where the Group 2 is located, but the Faculty of Education is

located in a rural settlement. These two universities involved in the Bologna process, since both aim to achieve better standards in all areas of education and support educational programs around the world. All courses are carried out following the framework program set by the Higher Education Council of Turkey. The duration of training for both universities is determined as eight semesters in four academic years.

2.2. Participants of the Study

In this study, participants were included according to the convenience sampling method by involving individuals who are available or accessible at the time of the research (Fraenkel & Wallen, 2009). Also, convenience sampling was explained as choosing the nearest individuals (Cohen, Manion, & Morrison, 2007). In this study, pre-service teachers who enrolled in Elementary Education-Classroom Teaching Department were included. In Group 1, among 41 senior pre-service teachers, 35 of them took both the pre and post-Curriculum Development Course Achievement Test (AT) and 37 of them filled the Reflective Thinking Scale, and in Group 2, among 34 senior pre-service teachers 28 of them were willing to take both the pre and post AT and 32 of them filled the Reflective Thinking Scale.

2.3. Data Collection Materials and Procedures

In this study, data were collected through, ‘Achievement Test (AT)’, ‘Reflective Thinking Scale’ and ‘Weekly Reflective Writing Form’. AT and Reflective Thinking Scale were implemented in both groups but ‘Weekly Reflective Writing Form’ was implemented only in Group 1. At the beginning of the study, AT was implemented in both universities in order to determine the Curriculum knowledge levels of pre-service teachers. Pre-service teachers were given enough time to answer the questions in the AT. In addition, pre-service teachers applied their theoretical knowledge, during their School Practicum where they have prepared lesson plans with objectives of the course, content, teaching-learning activities, and evaluation process, which are the topics of the Curriculum Development Course and it was expected that these elements should be compatible for an effective instruction. Pre-service teachers in both groups have to take School Practicum Course and they conducted similar activities. For instance, both groups prepared lesson plans and taught in classes besides their mentor teachers.

Moreover, in Group 1 who took Curriculum Development course at the last semester after the introduction of the subject by the instructor using PowerPoint presentations and conducting class discussions, pre-service teachers were asked to think about the subjects of the course and write a reflective paper in the face-to-face part of the Curriculum Development course by benefitting from their experiences and observations in their school practices using Weekly Reflective Writing Form. The reflective writing applications lasted for nine weeks in the spring semester of the academic year 2018-2019.

For example, after learning “Curriculum design approaches and models”, they were asked to write about “Can learner-centered and problem-centered curriculum designs be implemented in our education system besides subject-centered curriculum designs? If not, because of which specific properties of designs or our education system it stems from? Please discuss it by providing reasons.” While learning the “Needs analysis approaches and techniques” topics, they were asked to write about “How do you determine the needs of students at the beginning of the semester or mid-term in the schools which you are appointed? Please discuss it by comparing the characteristics of different needs assessment techniques.” Also, in another course meeting, they were asked to write about “As a pre-service teacher, please explain with examples what kind of activities do you include in your plans (gaining learners’ attention, inform students of the objectives, recall of prior learning, use of different strategies to present content, provide feedback, assess performance and enhance retention) before teaching in your practice school? And “how do you place the instructional variables (cue, active participation, feedback-correction, reinforcement). When you consider these instructional variables in your teaching, did you observe any change during the course? For example, was the course more efficient? Was there a difference in students' learning? Please discuss it by providing examples from your internship practices.” These kinds of writings were included in the last 20-25 minutes of every course in order to help pre-service teachers turn back and think critically about what they had learned and how they could connect their knowledge with their real class applications. Finally, the Reflective Thinking Scale was implemented to pre-service teachers in two universities at the end of the semester, which took almost 10 minutes to complete. The properties of data collection materials were explained below respectively.

2.3.1. Curriculum Development Course Achievement Test (AT)

As for the validity and reliability of the AT, volunteer senior pre-service teachers studying at Manisa Celal Bayar, Ege, Çukurova, and Gazi Universities in Turkey were included in the study but none of them included in the experiential study. There were 317 pre-service teachers in total. 87 (23.45%) of them are from Ege University; 100 (26.95%) of them are from Çukurova University; 114 (30.72%) of them are from Gazi University and 70 (18.87%) of them are from Manisa Celal Bayar University.

AT consisted of 22 multiple choices and a matching type-three items question related to the Curriculum Development Course. Before developing the AT, the objectives of the test were determined so that, each item could evaluate a particular learning outcome. The objectives were developed following the aims and goals of the Curriculum Development Course as determined by the Council of Higher Education (YÖK, 2007). The use of the Test Analysis Program (TAP, version 14. 7. 4) revealed that the mean item difficulty of the test is 0.54, mean item discrimination is 0.40 and the Kr-20 reliability coefficient is 0.71. Hence, it can be said that the test is valid and reliable.

2.3.2. *Reflective Thinking Scale*

In this study, the “Reflective Thinking Scale” developed by Kember et al. (2000) and adapted to Turkish by Başol and Evin-Gencil (2013) was used. The scale consisted of a 16 5-point Likert type (ranging from 1=completely disagree to 5=completely agree) items and included four factors. For the original scale, the Cronbach Alpha coefficients of sub-scales changed between .62-.76. For the current study, the Cronbach Alpha inter-reliability coefficients for the sub-scales changed between .62-.79. Each sub-scale (“Habitual Action”, “Understanding”, “Reflection”, and “Critical Reflection”) included four items. In the “Habitual Action” sub-dimension, there are items related to the actions gained after repetitions without thinking too much. “Understanding” sub-dimension is limited to the comprehension dimension of Bloom's taxonomy and includes items such as understanding only the existing situation. In the “Reflection” sub-scale, there are items for questioning and internalizing what has been learned. There are items for learners to evaluate the situation, make sense of themselves and create new perspectives. “Critical Reflection” is the highest level of reflection, and the sub-scale contains items that reveal an obvious change in the learners’ perspective.

2.3.3. *Weekly Reflective Writing Form*

By using the weekly reflective writing form, pre-service teachers were asked to reflect on the topic of the course by benefitting from their experiences and observations during their school practices each week in the course time. They were asked to reflect and write on important points of their teaching practices since they were expected to improve their teaching skills as they think and write about their actions. The questions which were asked to pre-service teachers every week were checked by an expert. For instance, while learning the teaching-learning dimension of curriculum and the variables affecting quality education process, the expert suggested adding a hint to the question “What would I change if I had taught this course again?” and included “Which methods, techniques or materials could make the learning of the subject more understandable?” Furthermore, for another question, the expert suggested asking the question of “How did I assess the level of achievement of the students whom I taught in my teaching school?, rather than “How did I assess whether I could or could not achieve the goals of the course? to be more precise, focus them on student learning and affective gains, and create a space for pre-service teachers to reflect on their observations and experiences. After taking the opinions of an expert who works in the Curriculum and Instruction Department, the questions took their final form.

2.4. *Data Analysis*

Before answering the first research question, the equality of Group 1 and Group 2 was checked by implementing AT as a pre-test at the beginning of the semester. The results of the independent samples t-test were shown in Table 1.

Table 1. The Results of the Independent Samples t-test

Group	M	SD	t	df
Group 2	51.14	13.13	4.00*	61
Group 1	36.11	16.01		

First of all, the equality of variances between the two groups was checked with Levene's test. After finding that this assumption was not violated ($p=.85 >.05$), the t-test results were presented accordingly. As can be seen in Table 1, pre-service teachers' knowledge in the Group 2 ($M = 51.63$, $SD = 14.13$) was significantly higher from the Group 1 ($M = 35.78$, $SD = 15.91$), $t(66) = 4.32$, $p=.001$. For this reason, for further analysis, ANCOVA was performed in order to determine whether there were differences between Group 1 and Group 2 according to their achievement after controlling for pre-test scores.

Before conducting ANCOVA, assumptions of homogeneity of variance [$F(1, 61) = 1.21$, $p > .05$] and homogeneity of regression coefficients [$F(1, 59) = 2.64$, $p > .05$] were checked (Field, 2009; Tabachnick & Fidell, 2007).

In order to answer the second research question, MANOVA was conducted after checking the assumptions (Field, 2009; Gall, Gall, & Borg, 2003; Tabachnick & Fidell, 2007). The homogeneity of variance assumption revealed no violation for all dependent variables which are Habitual Action, $F(1, 67) = .88$, $p > .05$; Understanding $F(1, 67) = 1.46$, $p > .05$; Reflection $F(1, 67) = 1.36$, $p > .05$; Critical Reflection, $F(1, 67) = 1.97$, $p > .05$. Since, Mardia's test results indicated a significant pattern ($p < .05$), and the Box's $M = 32.18$, $F(10, 20423, 38) = 3.01$, $p < .05$ was significant, Pillai's Trace values were reported to check the significance of the MANOVA model. The statistical analysis was conducted using SPSS 22.0 and the alpha level was pre-determined as .05 (Field, 2009).

In order to answer the third research question and investigate the depth of pre-service teachers' reflection is, the written journals of pre-service teachers were analyzed according to Hatton and Smith's (1995, p. 48) framework (Descriptive Writing, Descriptive Reflection, Dialogic reflection, Critical Reflection). The 'Descriptive Writing' category was analyzed according to including the description of events that occur in classes without reflection. The 'Descriptive Reflection' category was checked to see whether it included not only the description of events but also provided reasons for justification of events or actions and included alternative viewpoints. Moreover, while analyzing the 'Dialogic reflection' category, the pre-service teachers were expected to step back from the events/actions and take part in self-discourse and the judgement of possible alternatives and hypotheses. Finally, during the 'Critical Reflection' category pre-service teachers were expected to be aware of the fact that their actions and the events occurring in classes are influenced by multiple historical, and socio-political

contexts. The reflection categories of pre-service teachers who took the Curriculum Development course in the last semester were computed to see the depth of their reflections (see Appendix 1). In other words, qualitative data were quantified and represented in frequency for each pre-service teachers using codes such as S1, S2, S3, etc. For the analysis two of each pre-service teachers' weekly reflections were chosen. The first one included the number of reflections analyzed in the middle of the semester and the second one included the number of reflections analyzed at the end of the semester for the practical reasons and with the idea that reflective thinking develops in time. A second evaluator who is an expert in Curriculum and Instruction and has several studies about reflective thinking separately analyzed the journals and a consensus was reached on the analysis of the journals according to Hatton & Smith's (1995, p. 48) framework. The suggestions of another evaluator contributed to the inter-reliability of the study.

3. Results

In order to reveal the findings for the first research question which asks whether the course knowledge of pre-service teachers differed significantly between groups who took the Curriculum Development course and those who did not take, ANCOVA was conducted and the results were presented in Table 2.

Table 2. The Effect of Group on Post-Test Scores When Pre-Test Scores were Controlled

Source	df	SS	MS	F	η^2
Pre-test	1	984.46	984.46	9.36*	.14
Group	1	9691.92	9691.92	92.15*	.61
Error	60	6310.51	105.18		
Corrected Total	62	16233.65			

According to Table 2, the groups of pre-service teachers and pre-test scores had a significant effect on the achievement, $F(1, 60) = 92.15, p < .05$. Hence, it can be said that pre-service teachers' AT scores and pre-test scores were influenced by the groups they were in. The AT mean scores of pre-service teachers were adjusted according to controlled pre-test scores as shown in Table 3.

Table 3. Comparison of Means and Standard Deviations Before and After Adjustment

	Before Adjustment		After Adjustment	
	M	SD	M	SD
Group 1	74.97	11.29	76.84	1.83
Group 2	51.00	10.48	48.78	2.08

It was found that Group 1 had a higher adjusted mean ($M=76.84, SD=1.83$) than Group 2 ($M=48.78, SD=2.08$). Moreover, the strength of the relationship between the

groups of pre-service teachers and their AT scores was assessed by partial eta squared, and as it can be seen in Table 2, the group explained 61% of the variance of the AT scores. In addition, pre-service teachers’ pre-test scores explained 14% of the variance on their achievement scores.

Also, the second research question proposed to investigate whether there is a significant difference between the reflective thinking levels of pre-service teachers who took the Curriculum Development course including reflective thinking activities at the last semester, and those who did not. After conducting MANOVA, firstly, mean scores and standard deviations according to the factors of the scale were shown in Table 4.

Table 4. Means and Standard Deviations for the Factors of the Reflective Thinking Scale

Departments	Habitual Action		Understanding		Reflection		Critical Reflection	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Group 1	14.81	3.17	16.51	3.05	16.76	2.98	14.41	3.65
Group 2	13.03	3.31	14.84	2.08	17.56	1.79	14.78	2.42

According to descriptive statistics shown in Table 4, pre-service teachers who were in the Group 1 perceived habitual action ($M=14.81$, $SD=3.17$) and understanding ($M=16.51$, $SD=3.05$) dimensions of reflective thinking scale higher than those who were in Group 2. On the other hand, pre-service teachers who were in Group 2 perceived the reflection ($M=17.56$, $SD=1.79$) property of reflective thinking scale as higher than those who were in Group 1. Finally, both groups had similar mean scores in terms of critical reflection property of the scale.

According to MANOVA analysis, the group had a significant effect on dependent variables $F(4, 64) = 5.28$, $p < .05$. Before revealing univariate results, Bonferroni correction was conducted by dividing alpha value to the number of dependent variables ($.05/4 = .13$) in order to keep Type I error control very strict (Field, 2009).

Table 5. Multivariate and Univariate Analyses of Variance for the Reflective Thinking Perceptions of Pre-Service Teachers

Variable	MANOVA* F (4,64)	Habitual Action **	ANOVA F (1,67)		
			Understanding**	Reflection	Critical Reflection
Group	5.28	5.20	6.83	1.78	.25

* $p < .05$, ** $p < .13$

According to the results which were shown in Table 5, the group had a significant effect on Habitual Action, $F(1, 67) = 5.20$, $p < .001$ and Understanding, $F(1, 67) = 6.83$, $p < .001$ dimensions of reflective thinking scale. However, it did not have a significant

effect on Reflection $F(1, 67) = 1.78, p > .05$ and Critical Reflection $F(1, 67) = .25, p > .05$ dimensions of reflective thinking scale. In other words, pre-service teachers who were involved in the Group 1 had significantly higher reflective thinking levels according to habitual action and understanding dimensions, but these two groups did not differ significantly according to the reflection and critical reflection dimensions.

Moreover, the strength of the relationship between the groups and pre-service teachers' reflective thinking levels was assessed by partial eta squared (η^2) and it was found $\eta^2 = 0.25$ which is a medium effect ($\eta^2 > .24$) according to Cohen (1988) and indicated that the group explained 25 % of the variance in reflective thinking levels of them (cited in Morgan, Leech, Gloeckner, & Barrett, 2007).

In search of the answer to the third research question, which was about the depth of pre-service teachers' reflection who took the Curriculum Development course in the last semester. In order to answer this question, written journals of pre-service teachers were analyzed using Hatton & Smith's (1995) reflective thinking framework and analysis of the journals were presented with quotations from those writings. The frequencies of these codes were computed, tabulated, and provided in Appendix 1.

According to the findings, pre-service teachers reflected at the descriptive reflection category (second category) in their writings more than the other types of reflection categories. For the reflections written in the middle of the semester, the total number of descriptive writings was 4, descriptive reflection was 122, dialogic reflection was 21, and critical reflection was 5. For the reflections written at the end of the semester, the total number of descriptive writings was increased to 23, descriptive reflection was 127, dialogic reflection was decreased to 1, and critical reflection was 5. The total number of reflections was 152 in the middle of the semester and it was 156 at the end of the semester.

According to the findings, the number of descriptive writings increased in the journals written at the end of the semester. It might be said that pre-service teachers inclined to describe what happened in the class and how they responded to this situation, but they did not prefer to provide an analysis of the class issues or did not consider different social and contextual factors much. A typical reflection for descriptive writing category is as follow:

After I explained the subject according to the level of the class in my practice school, I included the question-answer technique. Then, I arranged different activities. Students listened to the lesson with interest and answered my questions. They participated in different activities and games (S7).

Moreover, the findings of the study showed that the largest number of reflections was descriptive reflection which was based on Hatton and Smith's (1995) framework. It can be inferred that pre-service teachers mostly tended to provide reasons for their actions or proposed suggestions for the problems they encountered in class which was based mostly on their judgment or their theoretical learning taught in the class. For example:

If I conducted this practice again, I would change some of my practices. At first, when students could not give the answers to the questions, I answered instead of them. However, if I had given them clues, it would be more effective and permanent learning. Sometimes I forgot to give feedback to my students. But after some practice, I started to pay attention to these variables (S25).

In addition to these, the findings of the study showed that the number of dialogical reflections was decreased at the end of the semester when it was compared to those written in the middle of the semester. At the end of the semester, only one reflection was dialogical. It can be explained by the fact that at the end of the semester, pre-service teachers did not step back from their practices and think deliberately over their practices, explore the reasons for different issues or actions through discourse with themselves. An example of the dialogical reflection as the following.

I observed that some students were willing to answer the questions I asked, but some students were not willing to do it. This may be due to the fact that not all of them could completely learn the subject since I could not provide enough variety in terms of activities and materials... Therefore, I should observe the students and prepare different activities according to their interests. Besides visual materials, I can attach more importance to the use of videos. These may help students to focus on course subjects. Besides, students like games thanks to their age. So, I can arrange different games involving the topics of the course. Consequently, learning becomes more permanent (S31).

Finally, when dealing with class issues, only five pre-service teachers' reflections corresponded to the Hatton and Smith's (1995) criteria for critical reflection both in the middle and at the end of the semester. An example of the dialogical reflection is as follows.

This semester, my internship class is second graders. I have not expected many students to show higher performance. In terms of achievement, the class is

homogeneous, not heterogeneous. But they're worse than I expected in terms of their behavior and social relationships. Their parents are educated but they had often ignored too much misbehavior of their children since they are successful at school courses. Although I expected students to be more respectful to each other and accept each other without prejudice and unconditionally, on the contrary, they were very insensitive and disrespectful to each other. Unfortunately, their teachers could control them through pressure. Even though their participation in the class is very high, they are always in a race with each other (S19).

4. Discussion and Conclusions

The findings for the first research question revealed that after taking the Curriculum Development course, pre-service teachers who were in Group 1 increased their course knowledge significantly. This result might have stemmed from the fact that they engaged in reflective writing activities and had thought about their actions and practices deeply and thus they have improved their theoretical knowledge, which is in line with previous literature (Moon, 2004; Sparks-Langer et al., 1990; Dewey, 1933).

The findings for the second research question revealed that the Curriculum Development course enriched with reflective writing activities affected the reflective thinking skills of pre-service teachers in habitual action and understanding categories, but it did not have a significant effect on the reflection and critical reflection dimensions. Apart from this study, Kember et al. (2000) found the mean scores for habitual action and critical reflection lower than those for understanding and reflection dimensions. The results of the study conducted by Namvar et al. (2009) showed that the use of blog writing had a positive effect on the understanding, reflection, and critical reflection levels of third grade English Literature students, but did not have a positive effect on habitual action.

It was unearthed in the current study that pre-service teachers had an apt towards using habitual actions and understanding skills according to Kember et al. (2000) framework and preferred to describe the events they experienced according to Hatton & Smith's framework more than using reflection and critical reflection. In other words, the reflection levels of pre-service teachers were mostly at the basics levels and they could not reach higher reflection categories at the end of the semester before they graduated. Similarly, Ayan (2010) investigated the role of electronic portfolio building on pre-service teachers' reflection levels studying in the Foreign Language Education Department and found that they reflected at descriptive writing and descriptive reflection categories much more than dialogic reflection and critical reflection categories according to Hatton & Smith's framework. Furthermore, Cigdem (2012) revealed that blog writing significantly improved the critical reflection scores of pre-service teachers studying in the Computer

Education and Instructional Technologies Department in the practicum course but it did not have a significant effect on pre-service teachers' habitual action, understanding, and reflective thinking scores according to Kember et al. (2000) framework. In university courses, pre-service teachers are mostly involved in habitual action type reflection because this category requires pre-service teachers to perform particular actions repeatedly. While pre-service teachers in Group 1 had to write reflective journals both for the Curriculum Development Course, those in Group 2 did not write journals since they did not take the Curriculum Development course. Also, as stated by Kember (1999), university courses are mostly designed to be achieved according to Bloom's understanding level. Hence, in the current study, the groups differed in terms of habitual action and understanding categories. On the other hand, reflection and critical reflection require a higher level of reflective thinking skills which demand major changes in beliefs and perspectives and also necessitate deep and deliberate thinking by taking the political, historical, social and contextual factors into consideration and change in a long time as stated by Fox et al. (2019) and Sparks-Langer et al. (1990). Pre-service teachers rarely reflected on dialogical and critical reflection levels. For instance, when they reflected on grouping strategies, they did not reflect on their ties with social values. Hence, these two groups did not differ in terms of reflection and critical reflection categories.

The reflection levels of pre-service teachers did not change much from the middle of the semester to the end of the semester even they learned more theoretical knowledge and practiced them in their internship schools. However, different from the current study, in the study conducted by Hramiak et al. (2009), it was unearthed that writing reflective blogs resulted in a change in the level of reflections. They stated that post-graduate (secondary) trainee teachers started to write at descriptive level, but then they became more reflective. Also, reflective writing is shifted from descriptive writing and descriptive reflection levels which are at lower levels of reflection categories compared to dialogical writing and critical reflection levels which are at the higher levels of reflection categories within weeks. Sanal-Erginel (2006) revealed that although it was limited, pre-service teachers began to refer to theory and considered contextual factors when they reflect on their experiences towards the end of the course. Moreover, Fox et al. (2019) found changes in teachers' reflections where they progressed from technical to contextual and dialectical levels of reflection, although it was not linear development for all teachers. In the current study, the reason for the similar number of reflections written in the middle of the semester and at the end of the semester might have stemmed from the burden of pre-service teachers' required to be completed at the end of the semester. Pre-service teachers had many course examinations to take and assignments to be handed in at the end of the semester at other courses, which might have affected their depth of reflections. For these reasons, pre-service teachers might not have spent quality time and effort while writing journals.

The findings of the current study revealed that pre-service teachers needed to expand the scope of their reflections to broader grounds including social, philosophical, ethical, and contextual values. This would enable them to look at their experiences from critical perspectives rather than just acting to fulfil their responsibilities. By looking from critical perspective, teachers may deliberately think about the goals, purposes, values, and constraints of education as also said by Sparks-Langer et al. (1990) and Valli (1997). In this way, they understand the importance of contextual factors in instructional decisions and educational practices.

5. Limitations and Implications

There are apparent limitations of this study. First of all, the weekly writing form might not adequately show the reflection quality of the pre-service teachers and might have directed them to focus on certain points. Although it was also stated by Moussa-Inaty (2015) that students preferred to use guiding questions while writing their reflections, future studies might ask pre-service teachers to reflect on any class issue, problem, or any points that pre-service teachers consider as important. Moreover, this study was limited to a semester course; however, longer studies are needed since the reflection skills develop in time. This study was conducted with 63 pre-service teachers who were in their final years of Classroom Teaching Departments of two universities located in the Aegean Region in Turkey. Therefore, the findings were limited to this context and this specific department's student profile. Although the findings cannot be generalized to all pre-service teachers, they provided evidence for the presence or absence of reflective thinking capabilities of pre-service teachers to a certain extent.

Moreover, in the current study, immediate feedback was not provided to pre-service teachers. However, it was argued that if the feedback was provided to practitioners, they would have benefited more from their reflective practices as also explained by Poom-Valickis and Mathews (2013). Besides, Moussa-Inaty (2015) stated that instructor feedback is one of the most effective methods for supporting and developing reflective writings. Moreover, Bain, Mills, Ballantyne, and Packer (2002) expressed that if practitioners were provided with feedback about their reflection levels rather than the content of their experiences mentioned in reflective journals, the level of practitioners' written reflections would have increased in time. Hence, future studies might also provide feedback to learners besides the reflections about teaching-learning methods, solving class issues, etc., but especially about the levels of their reflections. For this reason, pre-service teachers might be provided with example journals or allowed to write their journals in the class to obtain immediate feedback from their instructors.

All in all, it was found that taking the Curriculum Development Course enriched with reflective writing activities increased pre-service teachers' theoretical knowledge levels and thus resulted in significantly higher reflection levels in some dimensions of reflective

thinking. Hence, it can be said that this course is beneficial for them to learn and think about theoretical knowledge before applying it in real classroom practices.

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Appendix 1.

Table 1. The pre-test, post-test and number of reflective writings of Group 1

Pre-test	Post-test	DW1*	DR1*	DIR1*	CR1*	DW2**	DR2**	DIR2**	CR2*
36	88		6			1	4		
52	88	1	5	1		1	4	1	
36	76		4	1		2	3		
36	76		3	3			5		
36	80		8			1	4		
52	88		5	2		1	4		
64	76		4	1	2	1	4		
48	88		11		1	1	5		1
24	80		4			1	5		
24	44		5	1			6		
36	68		3	2					
48	80		5			1	3		1
24	84		5				4		
56	76						3		1

24	84		4	1			3		1
12	52		5				5		
32	80		3	2		1	3		
56	52		2	2	1	1	2		
28	64								
20	76		4	1			5		
20	88		4	1			5		
16	72		5			1	4		
40	68					1	4		
80	84					2	3		
48	76					1	4		
28	76		4		1				
36	60					1	5		
44	76		5				4		
16	84	1	8			1	5		
20	68		4	1			4		1
36	80						4		
40	84		4	1		1	4		
4	60					2	5		
40	84					1	4		
52	64	2	4	1					
Total Reflections		4	122	21	5	23	127	1	5

*DW1: Number of descriptive writing, DR1: number of descriptive reflection, DİR1: number of dialogical reflection, CR1: number of critical reflection in the middle of the semester.

**DW2: Number of descriptive writing, DR2: number of descriptive reflection, DİR2: number of dialogic reflection, CR2: number of critical reflection at the end of the semester.

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