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Field Experience and Digital Technology-Based Literacy Instruction

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This action research involves the use of Grossman's representation, decomposition and approximation framework in field experience and how pre-service teachers can use digital tools in literacy instruction. The analysis of the data revealed that pre-service teachers' participation in this action research had an impact on their self-efficacy beliefs towards literacy teaching (SEB-TL) and microteaching skills, and that the participants felt that teaching a field experience-based literacy instruction course (LIC) integrating the use of digital tools contributed positively to their professional development. Based on the research findings, the need to integrate digital tools into literacy instruction in teacher education in the 21st century was discussed. In addition, the importance of simultaneous implementation of field experience and theory in literacy instruction was discussed by bringing an alternative perspective to teacher education programs, in which theoretical courses are given first and then theory and practice are combined.

Keywords: Literacy instruction, digital technology, field experience, pre-service teacher, teacher education

INTRODUCTION

When we examine the literature focusing on teacher education (Bayrak Özmutlu, 2022; Darling-Hammond, 2000; Darling-Hammond et al., 2017; Korthagen et al., 2006), it is indicated that there are problems in linking theory and practice in university-based teacher education programs. Pre-service teachers' acquisition of field experience is among the prominent proposals for solving this problem. While it is important for pre-service teachers to have well-selected courses that include essential knowledge for teaching, it is just as important to organize teacher education programs in such a way that prospective teachers can integrate their knowledge and use their skills expertly in the classroom (Darling-Hammond, 2006). To provide "stronger learning opportunities" that lead to better-prepared teachers and better student learning, many universities have entered university-school partnerships in teacher education programs (Korth et al., 2006) and focused on clinical teacher education (Zeichner, 2021). In fact, many countries that focus on field experience in teacher education have transferred most of their teacher training to postgraduate level, which includes an intensive internship or practicum alongside in-depth pedagogical training. In Germany, France, and Japan, for example, pre-service teachers participate in teaching experience in schools throughout their two-year internship in addition to theoretical courses (Darling-Hammond, 2006). In Turkey, on the other hand, there is no teacher training program that will cater for field experience in teacher education apart from the university-school partnership.

In Turkey, teacher education is provided during four years of training given in the education faculties of universities. Practical lessons for pre-service teachers in the field of classroom education are limited to the "Teaching Practicum" course they take in the final year (in the 4th year). In this course, which is conducted by cooperation between the university and state school during two semesters, teacher candidates are present at the state school for 6 lesson periods on one day a week.

In previous studies on the teaching practicum course in Turkey (Batmaz & Ergen, 2020; Bay et al., 2020; Köse & Caner, 2022; Ülger, 2021), it was determined that certain problems are experienced, such as the high number of pre-service teachers for which teacher educators in faculties and schools are responsible, inadequate cooperation between faculties and schools, and pre-service teachers' inability to receive sufficient feedback about their microteaching. In addition to these problems, there is another very important problem specific to the field of classroom education. A prospective classroom teacher carries out his/her teaching practice in the same grade of the practicum primary school for a semester, or in some cases, even for a year. In this case, if he/she carries out his/her practice in the 4th grade of primary school, he/she cannot gain any practical experience related to other grades. Other than this program, pre-service teachers begin working as classroom teachers without receiving an education based on practice and theory, such as postgraduate or college education. For this reason, it is considered that classroom teachers, who will provide the basis for literacy, should take a LIC based on field experience to graduate well-equipped for literacy instruction.

Grossman's Framework for Field Experience

The framework developed by Grossman et al. (2009) by examining professional development programs is an important conceptualization in the subject of field experience. In this framework, three key concepts were specified to understand practice pedagogies in vocational education. These are: representations of practice,

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decomposition of practice, and approximation of practice. In addition, DeGraff et al. (2015), in their study in which they shared their experiences in designing and implementing an integrated literacy methods course in a field-based teacher education program, explained to pre-service teachers how they used Grossman's framework of representation, decomposition and approximation of practice to connect theory and practice in teaching literacy. These three concepts can be explained as follows:

1. *Representation of practice*. Representation of practice involves observing actual teaching as well as reviewing student work, lesson plans, and other practice products (Grossman, 2011). Pre-service teachers may have difficulty in determining what they should pay attention to while observing a lesson (Grossman et al., 2009). Therefore, in their courses at university, teacher educators should guide pre-service teachers in terms of what to pay attention to in their observations (DeGraff, 2011).
2. *Decomposition of practice.* Decomposition of practice involves focusing on observations and discussing practice by breaking it down into its components (Grossman et al., 2009; Grossman, 2011). Pre-service teachers should have a common language or "grammar of practice" to successfully decompose practice (Grossman, 2011, p. 2839). Pre-service teachers should be guided and provided with scaffolding, such as observation tools, that will help them to know how to make sense of their observations. Field-based methods courses offer unique opportunities to develop understanding of theories and to use the "grammar of practice" via the process of representation and decomposition in classroom contexts (DeGraff, 2011).
3. *Approximation of practice*. One way to offer pre-service teachers opportunities for experimentation in university courses is to use practical approaches. Therefore, pre-service teachers may be required to simulate certain aspects of practice through activities such as preparing lesson plans and role-playing (Grossman et al., 2009). Making a lesson plan and simulation before delivering a lesson in a real classroom environment enables pre-service teachers to recognize their deficient areas. However, performing practice and evaluating this practice in a real classroom is much more effective than simulating the lesson. Indeed, Darling-Hammond and McLaughlin (1995) state that the most beneficial professional development involves active teaching, assessment, observation, and reflection rather than abstract discussion.

Literacy Instruction in The Digital Age

In the 21st century, developments in the digital field have resulted in a change in our reading and writing habits. The transition from printed texts to digital texts has changed the understanding of literacy. Smartphones, e-books, digital stories, and digital media are among the essentials of life. The changing understanding of literacy due to digital developments reveals efforts to integrate technology, as well as digital literacy, into literacy instruction in many studies (Barone & Wright, 2008; Phadung et al., 2016; Oakley et al., 2022; Rowsell et al., 2008). However, it can be said that these efforts have not yet been sufficiently reflected in the content of LICs in teacher education programs. For example, Oliveira et al. (2019) examined the contents of literacy courses in teacher education programs in Portugal. In their study, it was concluded that the most critical features of literacy instruction were included in the course contents of most teacher education programs. However, they did not conclude that a content that would integrate digital literacy into literacy instruction was included in the course contents. However, according to Neumann et al. (2017), digital literacy and basic literacy skills develop together and support each other, based on the socio-cultural environment in which the child lives. For this reason, it is important to associate basic literacy skills with real-world applications (Oakley et al., 2022). Failure to utilize digital tools in teaching literacy to the new generation children, who are defined as *digital natives* (Prensky, 2001) and thereby keeping basic literacy skills separate from digital literacy skills, will fail to meet the needs of the new generation. For this purpose, Web 2.0 technology tools can be utilized in instruction. In teaching, Web 2.0 technology tools provide multi-option and inexpensive ways for pre-service teachers to learn to benefit from technology in their teaching, and to support the teaching of basic literacy skills with digital literacy by using Web 2.0 tools. In their study, Smith, and Dobson (2011) found that pre-service teachers used digital tools such as blogs, microblogs, and podcasting in preparing lesson plans and teaching aimed at literacy instruction. In the 21st century, prospective teachers are expected to use more of these tools for teaching literacy. For example, Web 2.0 tools such as LearningApps, Wordwall, Kahoot, Pixton, and StoryJumper are tools that can be used in literacy instruction for teaching skills

such as phonological awareness, word recognition, reading short texts, and associating texts with images, or in the measurement and evaluation of these skills. In their study, Paatsch et al. (2015) determined that pre-service teachers were active users of technology-based tools, but that they had limited experience of using Web 2.0 tools and limited pedagogical understanding of how they would use these digital tools for teaching literacy to young children in the future. Familiarizing pre-service teachers who take the LIC with ways to utilize instructional technologies and Web 2.0 tools in literacy instruction, presenting examples of activities, and encouraging them to use Web 2.0 tools for microteaching will be beneficial for teaching the literacy skills of the digital age.

The Current Study

Based on the need for field experience in literacy instruction in the classroom teacher education program in Turkey, the purpose of this study was to conduct action research on literacy instruction based on Grossman's (2009) framework. It is hoped that the study will bring an alternative perspective to teacher education programs that first include theoretical courses and then combine theory and field training. Another focus of the study is to examine the effectiveness of a LIC in which pre-service teachers will support the teaching of literacy skills with digital tools. For this purpose, answers to the following questions were sought in the study:

1. Does the intervention have an effect on pre-service teachers' SEB-TL?
2. Does the intervention have an effect on pre-service teachers' microteaching skills for teaching literacy?
3. What kind of effect does the intervention have on pre-service teachers' views about LIC?

METHOD

Action research is the creation of knowledge by analysing one's own practice and the improvement of one's practice by using this knowledge (McNiff & Whitehead, 2010). The purpose of action research is to solve problems in a program, organisation, or community (Patton, 2014). Educators aim to solve the problems they encounter or to improve their educational practices by examining the problems. Educators reflect on these problems, collect, and analyse data, and implement changes based on their findings (Cresswell, 2002). The present study is based on practical action research, which is one of Cresswell's (2002) classifications of action research. Practical action research is small-scale and narrowly focused on a specific problem or issue and focuses on student learning and on teacher development by individual teachers or teams in a school or school district (Cresswell, 2002). This study is based on practical action research because it focuses on the problem of establishing a link between theory and practice in pre-service teachers' literacy instruction.

Action Plan of Current Study

The study was conducted within the framework of the action plan presented in Figure 1.

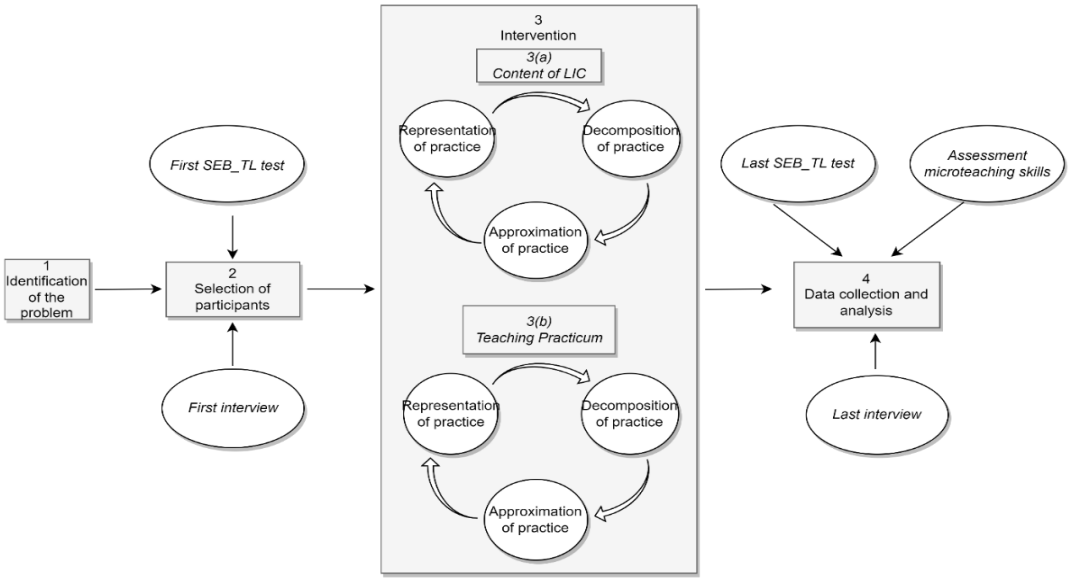

Figure 1. Stages Of Action Plan of Current Study

1. *Identification of the problem.* One of the findings of my previous research on pre-service teachers (Çetinkaya, 2019) was that pre-service teachers held the view that the teacher education program was inadequate in terms of field experience. In another of my studies (Çetinkaya, 2021), it was concluded that classroom teachers had difficulties in teaching literacy when they commenced employment due to their lack of field experience, and based on this finding, it was suggested that the LIC should be carried out together with school practice. In addition to my previous studies, my observations in the LIC, which I have been teaching for many years, have revealed the importance of pre-service teachers' acquisition of real classroom environment experiences in the LIC. Courses such as "information technologies in education" and "instructional technologies" are included in teacher education programs. On the other hand, it is not compulsory in teacher education programs to integrate literacy instruction with digital literacy skills by utilising instructional technologies in the LIC, in other words, by utilising digital tools in literacy instruction. Rather, it is carried out at the discretion of teacher educators. However, I believe that for inter-class integration rather than disconnected courses, pre-service teachers need to learn how to utilise digital tools in literacy instruction. I think it is important for pre-service teachers to experience in the practicum school the theory they have learned about literacy instruction enriched with digital tools, so that they can carry out the literacy instruction required by the digital age. Based on these considerations, I decided to conduct action research to better support the knowledge and skills that pre-service teachers need for literacy instruction. In this context, the value that underpins the present study is consistency. Consistency is concerned with my being a teacher educator who practices what she preaches: that the LIC should be based on field experience by integrating it with digital technology.

2. *Selection of participants.* It was not possible for me to carry out the current action research on all pre-service teachers who took the LIC, because I could not provide clinical supervision to a class of 55 students in their school practice, while the number of colleagues who could support me in this regard at the university where I worked was also insufficient, and those who were present were working under a heavy course load. In my previous literacy instruction classes, I prepared a lesson plan and did simulation activities in class. In these activities, I observed that the teaching skills of students who lacked confidence regarding literacy instruction were less adequate. Therefore, I decided to conduct my study on a group of pre-service teachers with lower SEB-TL. I wished to examine the impact of the intervention on participants' SEB-TL and teaching skills for literacy instruction. Thus, I selected the volunteer participants by administering the self-efficacy scale for literacy instruction. After selection of the participants, I conducted my first interview.

3. *Intervention*

   (a) Content of LIC. The participants attended the LIC together with their other classmates. The course comprises 3 lecture hours over a period of 15 weeks. The content of the course includes the use of instructional technologies/Web 2.0 tools in literacy instruction as well as subject area knowledge of literacy. Classes on the use of Web 2.0 tools were taught by one of the commission members, who is a classroom teacher receiving doctorate education and who also has 15 years of experience in primary schools. In the course, in addition to basic skills aimed at literacy instruction such as preparing presentations on the computer, selecting, and using digital content such as video, animation and music, and making use of smart boards for instruction, the LearningApps, Wordwall, Kahoot, Pixton, StoryJumper and Powtoon Web 2.0 tools were introduced, and examples of instructional activities related to using these tools in literacy instruction were presented. The commission member explained to the preservice teachers how she/he designed and implemented the instructional activities she/he prepared for her/his own students at the primary school where she/he worked.

   The course at the university also included micro-teaching activities in simulated classroom. The pre-service teachers were required to utilize at least one Web 2.0 tool for their micro-teaching activities. Thus, the participants participated in the activities organized on the basis of representation of the practice (observation of the activity examples prepared with Web 2.0 tools, lesson plans and micro-teaching activities of their classmates), decomposition of the practice (evaluation of the activity examples prepared with Web 2.0 tools, lesson plans and micro-teaching activities), and approximation to the practice (preparing a lesson plan and organizing a micro-teaching activity in an artificial classroom environment) with other classmates during the course.

(b) Teaching practicum. The participants attended the LIC together with their other classmates, and in addition to the course, also carried out their studies according to the three key concepts specified in the framework of Grossman et al. (2009).

Representation of practice: Participants observed three lesson periods in three different weeks at the practicum school. An unstructured observation form was used for the participants to report their impressions of the lessons they observed.

Examples of questions included in the observation form are as follows:

1. *What are your impressions of the activities for the introduction of the lesson you observed?*
2. *If you were to teach the lesson you observed, in which areas do you think you are competent and in which areas do you think you are lacking?*
3. *If you were teaching the lesson you observed, what activities would you conduct differently? Why?*

Decomposition of practice**:** In this step, the lesson observations at the practicum school were analysed. At the end of each observation week, the observation reports were discussed using the focus group discussion method. The things they would pay attention to in the next observation were planned again.

Approximation of practice: The participants designed and implemented an instructional activity lasting one lesson period in the practicum schools, where they made observations over three weeks. The participants' first microteaching was evaluated and discussed jointly. Afterwards, the participants carried out their second microteaching. The second microteaching was evaluated and discussed jointly. The pre-service teachers were required to use at least one Web 2.0 tool during their microteaching.

4. *Data collection and analysis.* Administration of the self-efficacy scale for literacy instruction, conducting the final interview, and analysis of microteaching.

Participants

Even if people improve themselves in a certain field, their competencies differ at specific levels even within that field (Bandura, 2006). With this thought in mind, the self- efficacy beliefs (SEB) of classroom teachers, who are expected to have mastery in numerous fields such as mathematics teaching, literacy instruction, and child psychology, may differ depending on the field in which they develop themselves. Bandura (2006) states that powerful experiences and achievements acquired in a field can affect people's SEB. Since the intention was also to examine the effect of the intervention on SEB-TL the research was conducted on pre-service teachers with low SEB-TL.

In the study, the self-efficacy scale for literacy instruction was administered to 55 pre-service teachers who took the LIC in a state university during the 2021-2022 academic year. Following this implementation, the 10 volunteer pre-service teachers who obtained the lowest scores comprised the study group. The mean self-efficacy scale score of the 55 pre-service teachers was 75.78. The mean self-efficacy scale score of the pre-service teachers in the study group was 51.2. Six of the participants were female and four were male.

My Role as Researcher

I have 12 years of classroom teaching experience in state primary schools. During this process, I gained experience in fostering literacy skills in first grade primary school students. Moreover, following this experience, I have worked as an academician at the faculty of education for 10 years. In the faculty, I conduct courses such as "Literacy Instruction" and "Teaching Practice" in the education of classroom teachers. In keeping with the nature of the action research, I have the role of a teacher educator conducting the LIC and a researcher in the study. In the preparation of the action plan, the preparation of the interview and observation forms, and the coding and analysis of the data, I worked together with a commission consisting of a classroom teacher who is receiving doctorate education and also has 15 years of experience in primary schools, an expert in the field of curricula and instruction, and a specialist in literacy instruction. During the process, I conducted the LIC and had the role of clinical supervisor in the participants' school practicum.

Data Collection Tools and Data Collection Process

Self-Efficacy Scale for Literacy Instruction

Developed by Delican (2016), the Self-Efficacy Scale for Literacy Instruction consists of 25 items and 3 sub-dimensions. The Cronbach alpha reliability coefficient for the whole scale was .90, while the Cronbach alpha reliability coefficients for each sub-dimension ranged between .77 and .90. Confirmatory factor analysis was performed as part of the scale validity study. Following this analysis, the 3-factor structure was confirmed.

The scale was administered to the participants before and after the intervention. The administration of the scale lasted approximately 20 minutes.

Semi-Structured Interview Form for Pre-Service Teachers

The interview form was developed to obtain the participants' views about the LIC and was prepared by seeking the opinions of the commission members. Examples of questions in the interview form are as follows:

1. *What are your views on the challenges of teaching literacy? What do you think about your own strengths and weaknesses in dealing with these difficulties?*
2. *How should the LIC be conducted in education faculties to carry out an effective literacy instruction in primary schools?*

Participants were interviewed before and after the intervention. An interview with each participant took approximately 25 minutes and was recorded.

Assessment Tool for Microteaching Skills

This assessment tool, which was developed by Bayat & Öztürk (2017), was revised, and used to evaluate the participants' microteaching skills. The assessment tool consists of 10 items and is scored as very good (4), good (3), moderate (2), and insufficient (1). Microteaching skills in the assessment tool include: communication skills, ability to make use of course materials and materials, ability to utilise instructional technologies (especially Web 2.0 tools), classroom management skills, ability to prepare a lesson plan, ability to select and implement appropriate teaching methodologies, subject matter knowledge for literacy instruction, and ability to implement instructional activities for the introduction, development and conclusion parts of the lesson.

Participants' microteaching in one lesson in the practicum schools was video recorded. The assessment tool was scored by examining lesson plans and recordings.

After the quantitative form was scored, impressions about the observed lesson were noted. In addition, after the second microteaching was scored, the video recordings of the first microteaching were watched again, and by comparing the first and second microteaching, observation notes were taken again. The observers watching the video recordings of the pre-service teachers' microteaching noted the pre-service teachers' behaviours that would represent in detail the microteaching skills included in the quantitative form. In addition, they noted excerpts from the lesson recording they watched to explain the reason for their assessment of microteaching skills.

Data Analysis

Analysis of Quantitative Data

The quantitative data obtained from this study were analysed with the SPSS software package. The quantitative datasets each consist of ten participants. Huck (2012) states that there are various opinions about the sample size taken as a criterion for subjecting datasets to normal distribution tests, and in this regard, suggests that normal distribution should be examined for groups with a sample size of more than six participants. In this context, first, the dataset was examined for normal distribution. At this stage, skewness and kurtosis values were examined and normality tests were performed. While skewness values are expected to be in the range of ± 1, kurtosis values should be between +2 and -1 (Huck, 2012). Since the number of participants was less than 50, the normality test was carried out using the Shapiro-Wilk test (Büyüköztürk, 2012). It was observed that the skewness and kurtosis values for the assessment tool for microteaching skills were within the specified ranges. The result of the Shapiro-Wilk test also shows that the dataset had a normal distribution ($p > .05$). When the kurtosis and skewness coefficients for the self-efficacy scale for literacy instruction were examined, however, it was determined that the kurtosis value was outside the specified

range. Moreover, according to the Shapiro-Wilk test, the dataset did not have a normal distribution ($p < .05$). In line with these findings, parametric tests were used for the analysis of the data obtained from the assessment tool for microteaching skills, while non-parametric tests were preferred for the dataset created with the self-efficacy scale for literacy instruction.

Analysis of Qualitative Data

The qualitative data consists of data obtained from the interview and observation notes.

The thematic analysis method was used for the analysis of the interview data. Braun and Clarke (2006) emphasise that there are six stages in thematic analysis. Accordingly, the following steps were followed in the analysis of the data:

1. Familiarisation with data: The data obtained from the interviews were transcribed, and then they were all read and re-read together with the written documents.
2. Generating initial codes: A qualitative data analysis program was used in the coding process. The data obtained in the second stage were read again by coding them. A code list was created. The data related to each code were collated.
3. Searching for themes: In the third stage, the codes were reviewed, and potential categories and themes were determined.
4. Reviewing themes: In the fourth stage, the coded data were examined in terms of consistency with the themes created. The categories and themes were simplified, and the themes were rearranged.
5. Defining and naming themes: The codes obtained from the data were re-examined in terms of consistency with categories and themes.
6. Producing the report: For the presentation of the interview data, the themes and categories found based on the first interview and final interview data were presented by combining them in the same table. Quotations related to the participants' views were presented by considering the criteria of being striking, presenting different views, and representing the themes. In the presentation of the quotations related to the interview data, the participants were coded as Participant 1 (P1), Participant 2 (P2), etc. Following all these stages, the data were read for the last time by the researcher and the commission.

Observation notes are also included in the analysis of qualitative data. The observation notes were read one by one, and the notes with a common meaning were combined based on the criteria of in-depth explanation of the quantitative data, identifying the points that overlapped with or diverged from the quantitative data, and explaining the reasons for the observers' judgements about the pre-service teachers' microteaching skills. The observation notes were summarised in such a way as to express this common meaning.

Validity and Reliability

This research is a mixed action research in which qualitative and quantitative data are interpreted together. To provide evidence of validity and reliability, the quantitative data collection tool, and the statistical calculations in the analysis of the data (normal distribution, skewness, kurtosis values, etc.) are explained in detail in the method section. In addition, the researcher, and among the commission members, the expert in literacy instruction scored the microteaching skills assessment tool independently of each other. For reliability, consistency in scoring was calculated by using the Miles and Huberman (1994) formula to determine cases of consensus and disagreement. The consistency in scoring between the two experts was calculated as .83.

Reliability in qualitative research can be ensured by explaining in detail the number of participants, how they were selected, the data collection tools, and analysis techniques used in the research (Creswell, 2002; Patton, 2014). Reliability was ensured by explaining this information in detail in the method section of the research. In addition, the following steps were followed for reliability:

- The qualitative observation notes regarding microteaching skills were read by the other commission members and the final revision in the data analysis was made by obtaining their opinions on whether the data in the observation notes reflected the common meaning.

- The data obtained from the interviews were read by the commission and their opinions on consistency between codes, categories and themes were obtained. Differences of opinion were discussed, and the final revision was made by renaming the themes and categories in line with the joint decision.
- In addition, a colleague from outside the commission read the article and provided critical feedback.

FINDINGS

Findings On Pre-Service Teachers' SEB-TL

The results of the Wilcoxon signed-rank test for pre-service teachers' SEB-TL are presented in Table 1.

Table 1. Wilcoxon Signed-Rank Test Results For SEB-TL

	n	Mean Rank	Sum of Ranks	z	p	Effect size
Negative Ranks	0	.00	.00	-2.814	.005*	r^2.79
Positive Ranks	10	5.50	55.00			
Ties	0					

*p < .01

When the pre-test and post-test mean scores for pre-service teachers' SEB for teaching literacy were compared, a statistically significant difference was found ($z = -2.814$, $p < .01$). When the mean ranks and sum of ranks of the difference scores are examined, this difference is in favour of the positive ranks, that is, the post-test mean scores. Based on this finding, it can be said that the intervention had an impact on pre-service teachers' SEB for teaching literacy.

In addition to the quantitative data, the findings obtained from the data of the first and final interviews held with the participants are presented in Table 2.

Table 2. Opinions Of Pre-Service Teachers on Their SEB-TL

First interview			Final interview		
Themes	Categories	Participants	Themes	Categories	Participants
Concerns about personality traits	Concern about not being patient enough with children	P6	Concerns about personality traits	Belief that concerns about not being patient enough with children can be overcome over time	P6
Concerns about teaching skills	Concern about maintaining classroom management	P1, P5, P10	Concerns about teaching skills	Confidence in coping with difficulties of classroom management	P2, P4, P7, P10
	Deficiency in/need for designing instructional activities	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10		Need to master advanced creativity skills for designing instructional activities	P3, P5
	Concern about communicating with children	P4, P5		Motivation for self-development in terms of drawing children's attention to the lesson	P5, P7, P9
	Concern about dealing with students with reading difficulties	P2			
	Concern about materials development	P2			
Beliefs about literacy instruction	Perception that literacy instruction is very difficult	P1, P6, P8	Beliefs about literacy instruction	Perception that difficulties in teaching literacy can be overcome	P1, P3, P8
	Perception that literacy instruction is a demanding process	P3, P7, P10		Perception that coping with difficulties in the literacy instruction process is a worthwhile effort	P3, P7, P6
	Perception that teachers have a lot of difficulty in the literacy instruction process	P2, P3, P5, P4		View that the intervention made a positive contribution to their SEB_TL	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10

Following the analysis made on the data from the interviews held with the participants regarding their SEB-TL three main themes were found. It was observed that three main factors affected participants' SEB-TL: participants' concerns about their personality traits, such as not being patient enough with students, concerns about their teaching skills, such as classroom management skills and designing instructional activities, and their belief that literacy instruction is difficult. Examination of the first and final interview data suggested that the intervention had an impact on the participants' SEB-TL Some excerpts from participants' statements in this regard are as follows:

"Children do not know anything about reading and writing. They will learn it for the first time from us. This is so difficult. What is frightening is remembering that a subject that is simple for us is difficult for children and being able to patiently explain it over and over again." (P6, first interview)

"Although I didn't know anything at the beginning of the semester and I had a lot of question marks in my mind, I now feel more advanced in this regard. I have greater self-confidence compared to the beginning of the semester, and I can imagine myself as a graduate and entering lessons in the classroom. I have more ideas about what to do when teaching literacy in the classroom." (P6, final interview)

"There have been many positive changes in my perspective on literacy instruction between the first day and the last day in this practice. In fact, in the early days, I realised that teaching literacy was more difficult than I thought it would be. Classroom management and being able to teach the child something was more difficult than I had imagined. But as the process progressed, these difficulties became less severe. Those faces that I didn't know before are now a part of my life. I saw that difficulties can be overcome with a lively and positive effort." (P7, final interview)

"Since each child's skills and developmental level are different, it is very difficult to teach literacy by dealing with them one-to-one. Our burden is very heavy in this regard." (P8, first interview)

"We need to reach every student during the lesson. We can ensure the active participation of each student in the lesson with the instructional activities that are organised. I trust myself in this regard. I also feel confident in conducting the lessons in a way that ensures holistic language development by allocating sufficient time to listening, speaking, reading, and writing activities. I can deal with these." (P8, final interview)

Findings on pre-service teachers' microteaching skills

Table 3. Paired Samples T-Test Results for Pre-Service Teachers' Microteaching Skills

	n	$\bar{x}$	SD	df	t	p	r
First test	10	26.10	2.23	9	3.836	.004*	27.7
Second test	10	32.00	3.16				

*p < .01

According to the results of the paired samples t-test analysis, a statistically significant difference was determined between pre-service teachers' first microteaching skills and second microteaching skills ($t_{(9)}$ = 3.836, p < .01). Accordingly, the mean scores in the second test are higher than the mean scores in the first test. The findings show that the intervention was effective in improving the pre-service teachers' microteaching skills.

According to the data obtained from the observation notes, it was observed that the pre-service teachers took care to use instructional technologies in both microteachings and also included digital literacy activities in their literacy activities by utilising Web 2.0 tools. It was seen that they included animation, digital games, digital stories, and especially in the assessment part of the lesson, assessment tools containing visuals, games and animation in the digital environment with Web 2.0 tools. It was observed that they created their own digital content, especially in their second microteaching, through certain software programs.

According to the observation data, pre-service teachers also showed improvement in their subject matter knowledge. For example, it was observed that P10 changed the expression "writing down the words they hear" in his lesson plan to "dictation practice" in his next lesson plan. In general, it was seen that while the participants were more tense in their first microteaching, they displayed a more relaxed stance, and their classroom management skills were more developed in their second microteaching. For example, it was observed that P4 was constantly squeezing the pencil in his hand during his first microteaching, whereas he did not exhibit this behaviour in his second microteaching. In addition, the fact that the participants' communication with the students was generally stronger in the second microteaching was among the findings in the observation notes. Moreover, it was observed that pre-service teachers made use of active teaching methods such as educational games and drama in their microteaching. Furthermore, in the second microteaching, an improvement was seen in the skills of designing instructional activities and conducting these activities.

Opinions of pre-service teachers about the LIC

Data related to the pre-service teachers' views on the LIC prior to and following the intervention are presented in Table 4.

Table 4. Data Related to Pre-Service Teachers' Views on the LIC

First interview				First interview	
Themes	Categories	Participants	Themes	Categories	Participants
Suggestions for course content	Communication with children	P3	Suggestions for course content	Communication with children	P3
	Communication with parents	P3, P7, P8		Use of instructional technologies	P3, P8
	Ensuring student motivation	P1, P3, P6, P10			
	Giving examples of instructional activities	P2, P3, P4, P6, P7, P8, P10			
Suggestions for teaching of the course	Microteaching in simulated classroom	P2, P5, P9, P10	Suggestions for teaching of the course	Microteaching in simulated classroom	P1, P2, P3, P4, P7, P8, P9, P10
	Observations in school	P3, P5, P10		School practice	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10

The findings obtained from the data of the interviews held with the pre-service teachers were gathered under two main themes: expectations/suggestions for the course content and for the teaching of the course. They made suggestions about effective communication regarding the course content in both the first and final interviews. For example, in the first interview, P3 suggested, *"I don't know how to communicate effectively with children and parents. This should be taught to us in the course",* and in the final interview, that *"Emphasis should be placed on effective communication in the LIC"*. In the opinions of the pre-service teachers, there was a need to develop the course content in this regard, especially in terms of literacy instruction.

Another finding obtained among the recommendations for the course content was the pre-service teachers' suggestions made in the first interview for giving examples of instructional activities related to literacy teaching. In the final interview, no recommendation was made in this regard. This situation can be interpreted as the fact that the pre-service teachers' expectations in this regard were met during the intervention process.

While the participants did not offer any suggestions related to instructional technologies among their recommendations for the course content in the first interview, they made suggestions in this regard in the final interview. It is thought that the reason why they wanted the teaching of instructional technologies to be included in the course content is that they saw that the theoretical knowledge they had received at the faculty was reflected in practice. For example, P8 expressed his thoughts with the following words: *"I realised that the important thing in the practicum school was to develop creative activities and to make use of instructional technologies. The lessons we learned on this subject were very useful in practice. This subject can be included more in the course content. Web 2.0 tools and digital tools that we will use in this course should also be introduced in other specific instruction courses at the faculty."*

When the views on the teaching of the lesson are examined, in the first and final interviews, the pre-service teachers included solution suggestions (observations, representations of practice, school practice) that would establish a link between theoretical knowledge and practice. In the final interview, by emphasising the positive development created by the inclusion of representations of practice in the teaching of the lesson and by conducting the course together with the practicum school, they suggested that the course should be conducted together with practice in schools. Examples of quotations related to the participants' views are as follows:

"Thanks to the representations of practice, I became aware of my deficiencies in my subject matter knowledge. The representations of practice made me question myself about my teaching skills and enabled me to prepare for the real classroom environment. Yet even so, my representation of practice was different from the actual classroom environment.

I feel lucky to have had the opportunity to make observations and microteach in a real classroom setting." (P5, Final interview)

"Like us, every prospective teacher in the faculty should have the opportunity to observe lessons in an actual classroom environment and to microteach in a real classroom. It has been very beneficial for our professional development. The more experience we have in schools, the more successful we will be in the future." (P4, Final interview)

"During the lesson, unexpected events can occur that can change the course of the lesson in a positive or negative way. Every pre-service teacher should experience such situations in the practicum school." (P9, Final interview)

"Communicating with students one-to-one both increased my self-confidence and provided me with a great experience. We should go to primary schools in all specific instruction courses, not just in the LIC." (P1, Final interview)

RESULT and DISCUSSION

This action research aimed to examine the effect of the experiences of the participants on their SEB_TL, on their micro-teaching skills and on their views about the LIC because of integrating LIC with digital technology and field experience. The results obtained in the study are discussed in order of the sub-problems.

There are studies showing that increasing the amount of coursework related to literacy has a positive effect on SEB-TL (Maloch et al., 2003; Raymond-West & Rangel, 2020, Shaw et al., 2007; Yıldırım & Ateş, 2012). Moreover, it has been revealed in various studies (Gurvitch & Metzler, 2009; Pytash & Hylton, 2022; Rogers-Haverback & Mee, 2015) that field experience has a positive impact on SEB-TL. SEB are affected by judgements about certain tasks, while at the same time, performance in future tasks is also affected by SEB (Bandura, 2006). In fact, Boonen et al. (2014) concluded in their research that teachers' teaching practices have a significant effect on first grade students' reading and spelling achievement. It was concluded that the intervention in this study, which aimed to integrate a theoretical course with practice, had a positive impact on pre-service teachers' SEB-TL. In this context, integrating field experiences into courses in the early period of teacher education can contribute positively to pre-service teachers' SEB, teaching skills, and their future students' literacy skills.

The findings obtained from qualitative and quantitative data in the study show that the intervention was effective on the microteaching skills of the participants. In this context, designing instructional activities, preparing lesson plans and microteaching activities carried out in the approximation to practice phase contributed to the improvement of pre-service teachers' teaching skills related to teaching literacy. DeGraff et al. (2015) also concurred with the results of this study in that the participants thought that taking the LIC together with the school practice organized according to Grossman's framework contributed to their teaching skills.

In the current study, the aim has been to utilize digital tools in literacy instruction and to integrate the theoretical knowledge on this subject into field experience through the LIC. It was observed that this experience had an impact on the ability of pre-service teachers to make use of instructional technologies/Web 2.0 digital tools in their microteaching. It is emphasized that the most important stage at which teachers learn to integrate technology into their teaching is during their pre-service training (Yıldız-Durak, 2021). Teacher education is a subject of particular interest, since it plays a dual role regarding technology, developing both trainee teachers' professional skills and their expertise in facilitating their own learning. In this regard, it is thought that the experiences gained within the scope of the current research contributed to the development of pre-service teachers' skills in using digital tools, as well as their ability to use digital tools in teaching. It is clear that learning how to make use of digital tools in teaching will benefit pre-service teachers greatly in connecting the school and the current education program with the digital world (Thorvaldsen & Madsen, 2020). To prepare teachers for the twenty-first century working environment, teacher education programs need to expand prospective teachers' literacy education with digital literacy (McLean & Rowsell, 2013). Moreover, pre-service teachers should be given opportunities to experience digital tools in their microteaching in practicum schools.

Finally, the opinions of the participants before and after the intervention were examined. The participants made suggestions regarding the content of the course and the process of conducting the course. While the participants suggested course content for communication with parents in the first interview, they did not make any suggestions in the last interview. It can be thought that the intervention addressed their concerns on this

issue. One participant suggested in the interviews held before and after the intervention that effective communication with children should be included in the course content. The basis of this finding was the pre-service teacher's need to improve himself/herself in communication with children. This need can be met more effectively by increasing the opportunity to communicate with children in schools rather than expanding the theoretical knowledge about effective communication in the course content.

Another finding obtained in the recommendations regarding course content was that in the first interview, pre-service teachers suggested that examples of instructional activities related to literacy instruction should be included in the course. However, they did not make any suggestions in this regard in the final interview. This situation can be interpreted as the fact that the intervention met the participants' expectations. Within the scope of the intervention, the participants designed and implemented instructional activities in the course taught at the university and in the practicum school and received feedback about these instructional activities. In this way, the participants gained ideas about the instructional activities designed both by themselves and in the course by their friends outside the participant group. It is known that the task of designing instructional activities for the teaching and learning of practice is a vital part of professional practice (Loewenberg Ball & Forzani, 2009). Instructional activities help pre-service teachers to build knowledge about how to improve their practice (Lampert & Graziani, 2009). According to the professional development framework of Grossman et al. (2009), designing instructional activities, implementing these activities, and obtaining feedback about them contribute especially to the "approximation of practice" stage.

The pre-service teachers suggested the use of instructional technologies should be taught in the last interview, although it was not in the first interview. The reason for this suggestion was their positive opinions about their experiences within the scope of the intervention. Darling-Hammond (2000; 2006) emphasizes that poor programs in teacher education consist of collections of unconnected courses. In addition, she underlines that for effective teacher education programs, there is a need for tight coherence and integration among courses and between courses and clinical work. It can be said that the studies carried out within the scope of the current research contribute to the integration of digital technology and LIC.

In the study, the pre-service teachers' positive opinions about the development of microteaching skills and field experiences indicate the importance of field experience. The findings of studies conducted on pre-service teachers correspond with the results of this study in terms of emphasizing the importance of field experience in pre-service teachers' professional development. For example, in the study by Hobson et al. (2006), most of the participants (48 out of 79) stated that their school-based experiences were the most valuable aspect of their initial teacher training. In contrast, only three participants identified their higher education institution-based training as the most valuable. In their study, Sailors et al. (2005) concluded that 90% of teachers who began teacher preparation programs stated that their field experiences were particularly valuable in preparing them to teach reading. The reason why such importance is given to field experience is that it serves to solve the most critical problem in teacher education -the problem of linking theoretical knowledge with practice- and gives pre-service teachers the opportunity to practice. Reich (2022) likens this opportunity to "drills" used in sports and music education. The more "drills" that pre-service teachers perform, the more their teaching skills will improve. For this reason, teacher education programs should be adopted that will conduct theory and practice simultaneously, and that will integrate the LIC, which is taught theoretically in teacher education, with field experience.

Limitations

One of the strengths of the study is that it draws attention to the integration of literacy teaching with the use of digital technology and the literacy teaching required by the digital age. In addition, the study draws attention to integrating theoretical courses in teacher education with field experience according to Grossman et al.'s (2009) framework. Nevertheless, the study has some limitations.

The study was conducted on 10 pre-service teachers for the reasons explained in the method section. Experimental studies can be carried out by conducting a similar study with all pre-service teachers in the class that takes the LIC.

In the current study, the participants were given the opportunity to be at the practicum school for one lesson period each in 5 different weeks. In the future, more comprehensive research studies can be carried out by increasing the time spent by participants in the practicum school.

Declarations

Conflict of Interest

No potential conflicts of interest were disclosed by the author(s) with respect to the research, authorship, or publication of this article.

Ethics Approval

The formal ethics approval was granted by the Social and Human Sciences Research and Publication Ethics Committee of Ordu University. We conducted the study in accordance with the Helsinki Declaration in 1975.

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- This material is the authors' own original work, which has not been previously published elsewhere.
- The paper reflects the authors' own research and analysis in a truthful and complete manner.
- The results are appropriately placed in the context of prior and existing research.
- All sources used are properly disclosed.

Contribution Rates of Authors to the Article

1st author contributed 100%.

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