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AN INVESTIGATION OF PRE-SERVICE SCIENCE TEACHERS' SELF-EFFICACY BELIEFS TOWARDS TEACHING AND THEIR TEACHING SKILLS

Research article

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AN INVESTIGATION OF PRE-SERVICE SCIENCE TEACHERS' SELF-EFFICACY BELIEFS TOWARDS TEACHING AND THEIR TEACHING SKILLS

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Abstract

The study aimed to scrutinize pre-service Science teachers' self-efficacy beliefs towards teaching, and their teaching skills. The study adopted the case study design, one of the qualitative research designs. The participants of the study consisted of 4 senior pre-service Science teachers who were selected using criterion sampling method, and on voluntary basis at a state university in Turkey in 2018-2019 academic year. The teacher self-efficacy scale, an observation form, and an interview form were used as data collection tools. The data were analyzed via regression analysis and content analysis methods. The results showed that many of the teaching skills of the pre-service teachers remained below the medium level and their skill levels were generally acceptable and intermediate, and between intermediate and good levels. It was also determined that pre-service teachers had some wrong behaviors such as not ensuring student participation, not being able to attract students' attention, selecting inappropriate activities for the level of the students, being unable to concretize abstract concepts, not evaluating the level of student achievements, and inability of classroom management. As a result, although pre-service teachers have high self-efficacy beliefs towards teaching, their teaching skills are at medium level and they have deficiencies in the planning of teaching, and during teaching periods.

Keywords: Pre-service Science teachers, self-efficacy, teaching skills, teaching behaviors

1. Introduction

Today, one of the important requirements for creating a knowledgeable society is that students take an active stance throughout the learning process (Baltaoğlu & Güven, 2019). Education systems can be adjusted to structure a society made up of individuals who learn actively lifelong. One of the most important elements of education systems is the teachers. The development of the society is closely related to the competencies and personal characteristics of teachers (Demirtaş, 2018). It is very important for teachers to pursue this profession and voluntarily in order to be successful in a job that requires patience, dedication, continuous work and self-renewal (Demirtaş, 2018). In order to do this, teachers need to develop their characteristics in this direction.

Specifically, the concept of teachers' characteristics basically includes the concepts of learning style and learning strategy. Another concept that can be associated with these concepts is self-efficacy (Baltaoğlu & Güven, 2019). High self-efficacy of both learners and teachers is a desired quality in the learning-teaching process. In particular, teacher's self-efficacy is important in terms of having an effective role in the improvement and development of students' self-efficacy (Baltaoğlu & Güven, 2019). When viewed from this aspect, it is important to determine the level of these skills while pre-service teachers to have

the necessary learning-teaching skills, to plan the next stages and to take the necessary measures (Gencel, 2013). In social learning theory, self-efficacy emerges with various sources of information that is conveyed through direct and indirect experiences and is defined as the effects produced by their own actions (Bandura, 1977). It also means the beliefs about the capacity of an individual to display her/his attitudes and skills towards life-related situations (Demirtaş, 2018). Self-efficacy beliefs determine students' insistence on the effort to be spent in dealing with a situation against obstacles and the individual's flexibility in adverse conditions (Demirtaş, 2018). Belief about a topic will lead to an improvement in an individual's attitude and also influence others to ensure that they have certain attitudes (Morgil, Seçken & Yücel, 2004). Perceived self-efficacy not only has a guiding effect on the choice of activities and environments, but can also influence coping efforts once initiated, through expectations of ultimate success. That is, the stronger the perceived self-efficacy, the more active the efforts are (Bandura, 1977).

The main purpose of the latest studies in Science Education is to prepare individuals for the rapidly changing and developing age of Science and technology, and to ensure that they are both scientifically and technologically literate (Azar, 2010). The realization of these situations depends on many factors. Self-efficacy in Science teaching is one of the main factors in learning in terms of attitudes (Erdem, 2015). Science teachers can improve their self-efficacy and attitudes towards the profession and express themselves with the highest efficiency in learning environments if their self-efficacy is high. These qualifications of teachers in the field of Science teaching can improve their students' skills such as thinking, interpreting, communicating, and analyzing. Improving the teaching framework, widening professional standards can enable teachers to have more teaching skills and beliefs, to have more self-confidence, to feel more positive and strong in their self-efficacy (Morgil, Seçken & Yücel, 2004). It can be thought that the successful implementation of the Science Education program may depend on teachers' self-efficacy beliefs, that is, their personal beliefs about their Science teaching abilities and their ability to produce positive results in Science for students (Çakiroglu, Çakiroglu & Boone, 2005). In other words, self-efficacy belief affects pre-service teachers' teaching qualifications and sustainability, and this dual interaction guides in organizing the educational process (Azar, 2010). To have competence in Science teaching, it needs teachers to continuously educate themselves, and to organize learning processes by the nature of Science. Individuals who are capable of organizing their own learning processes can learn better (Tortop & Eker, 2014). Nevertheless, individuals develop their self-efficacy through indirect experiences of their peers as well as building their self-efficacy through personal experiences (Corkett, Hatt & Benevides, 2011). However, pre-service teachers do not develop strong feelings of self-efficacy during university classes as little has been done to change the actual class education and new pedagogies are not implemented in a structured, supportive and closely supervised manner (Wasserman, 2009). Pre-service teachers should feel connected and have a sense of self-efficacy for the responsibilities they face during teaching (Ryel, Bernsauzen & van Tassell, 2001). Self-efficacy, pre-service teachers' self-assessment, and competence are a motivating factor (Arnold, Hascher, Messner, Niggli, Patry & Rahm, 2011; Pendergast, Garvis & Keogh, 2011). When the literature is examined, it is possible to come across many studies on pre-service teachers' self-efficacy.

Many studies are examining the relationship between pre-service teachers' self-efficacy and gender, academic achievement, attitudes towards chemistry, class level, branch, teaching motivations, learning styles and strategies, metacognitive awareness, chemistry efficacy perceptions, individual characteristics, teaching or not, and communication skills (Alkan & Erdem, 2014; Altunsoy, Çimen, Ekici, Atik & Gökmen, 2010; Azar, 2010; Baltaoğlu &

Güven 2019; Demirtaş 2018; Erdem, 2015; Hascher & Hagenauer, 2016; Ozkan, Dalli, Bingol, Metin & Yarali 2014; Uzun, Özkılıç & Şentürk 2010; Yalçın, 2011; Yesilyurt, 2013). Similarly, the differences in pre-service teachers' self-efficacy and attitudes towards computer-aided education and using the internet in the classroom were examined (Wang, Lertmer & Newby, 2004; Watson, 2006; Kutluca & Ekici, 2010).

After the teaching practice was completed, the change observed in pre-service teachers' self-efficacy beliefs and possible selves compared to their first years in the profession was revealed (Dalioglu & Adiguzel, 2016). It is also possible to encounter studies aimed at comparing one-year pre-service teachers with those who have just started education (Colson, Sparks, Berridge, Frimming & Willis, 2017). In another study, changes in a pre-service teacher's self-efficacy towards teaching experience from the first year to the third year of teaching were examined (Swan, Wolf & Cano 2011). It was investigated whether self-efficacy in class management and emotional exhaustion through obstacles in the class depends on the level of self-efficacy in class management (Dicke, Parker, Marsh, Kunter, Schmeck & Leutner 2014). As a result of these studies, it was revealed that there is a significant difference in self-efficacy in terms of all these variables.

Individual experiences in learning require more attention during a teaching practice. Research must take into account the fact that pre-service teachers benefit from previous teaching experiences in different ways. It is suggested that the quantity and quality of these experiences should be investigated in how they affect the cognitive, motivational, and emotional aspects of teaching behavior and learning to teach, and how they contribute to the development of professional competence (Hascher & Hagenauer, 2016). The differences in self-efficacy in the theoretical approach have important implications for how to study the perceived role of self-efficacy in motivational and behavioral processes. However, the intensity of the effort, the persistence, and thus the performance is higher than the strong self-efficacy (Bandura, 1977). From this point of view, in this study, pre-service teachers' teaching self-efficacy beliefs, teaching skills, and self-efficacy perceptions were tried to be examined together.

The aim of this study is to examine Science pre-service teachers' Science teaching self-efficacy beliefs, teaching skills, and teaching self-efficacy perceptions.

The problem sentence of the study is: "are pre-service Science teachers' self-efficacy beliefs a meaningful predictor of their teaching skills and what kind of teaching skills and self-efficacy perceptions do teacher candidates have?" was determined as. Within the scope of the research, answers to the research questions given below were sought:

- 1) Are pre-service Science teachers' self-efficacy beliefs towards teaching a statistically significant predictor of their teaching skills?
- 2) What are the teaching skills of pre-service Science teachers?
- 3) How are pre-service Science teachers' perceptions of self-efficacy towards teaching?

2. Method

This is a case study, one of the qualitative research designs. The case study is a method in which one or more situations, groups, events, or interconnected systems are studied in detail (Glesne, 2011; McMillan, 2000). In the case study, in-depth study of real-life situations that are generally not controlled (Yin, 2003). In this study, since it was aimed to explore the relationship between pre-service teachers' teaching self-efficacy beliefs, skills, and

perceptions in depth and with their reasons, without any intervention, the most appropriate method was the case study.

2.1. Participants

The participants of the study consisted of four volunteer senior pre-service Science teachers who were taking their teaching practice course in the spring semester of the 2018-2019 academic year. The participants were selected via criterion sampling method, one of the purposeful sampling methods. The criterion sampling method involves selecting individuals and situations that meet predetermined criteria and studying them (Patton, 2005). The criteria for pre-service teachers to take school experience and teaching practice lessons from the same teacher and lecturer was determined as a criterion. Volunteer forms were approved by the pre-service teachers provided that the information obtained was used for scientific purposes and that the real identities of the pre-service teachers were kept confidential.

2.2. Data Collection Tools

2.2.1. Self-Efficacy Belief Scale in Science Teaching

In the study, the Self-Efficacy Scale in Science Teaching, which was developed by Riggs and Enochs (1990) and adapted to Turkish by Hazır Bıkmaz (2002), was used. The scale was submitted for the opinions of 10 experts to be evaluated in terms of language, assessment, and content. The prepared scale and the original scale were applied to a group of 24 pre-service teachers and the equivalence coefficient was calculated as 0.68. Pilot applications were carried out with 279 pre-service teachers. As a result of the factor analysis, it was seen that the scale consists of two sub-dimensions: belief in efficacy and result expectancy. The scale consists of 21 items, 9 negative and 12 positive items. The reliability coefficient of the scale was calculated as 0.85. For this research, confirmatory factor analysis was used in validity studies and goodness of fit indices were calculated. It has been determined that all indices fall within the desired range. The Cronbach Alpha reliability coefficient was used in the reliability analysis and was calculated as 0.84.

2.2.2. Observation form

It was prepared by the researcher in order to determine the performance of pre-service teachers in the preparation for the teaching process and in the teaching process. First of all, the classes of the pre-service teachers were observed by going to the classes within the scope of teaching practice lesson. The relevant literature was examined and the analysis results of the data obtained from the observation results were considered together and a draft observation form was created. The draft form was submitted to the opinion of 3 Science Education experts who conducted the teaching practice. In line with expert opinions, some items were relocated and four items were removed from the observation form. Pilot observations were made within the scope of teaching practice lesson using the draft form. The observation form consists of four items in subject field knowledge (SFK), five items in field education (FE), five items in planning the learning-teaching process (PLTP), eight items in the teaching process (TP), eight items in classroom management (CM), and seven items in communication (C) and 37 items in total. Observations in the form created according to the five-point grading; It is classified as poor (1), acceptable (2), medium (3), good (4) and very good (5). Observations were carried out by the researchers and the teacher. In addition to filling out the observation form, the observers took notes about the observation and made explanations about the points they gave to each field. The data regarding the observations were prepared for analysis immediately on the same day and the written parts were cleared and recorded.

2.2.3. Semi-structured interview

A semi-structured interview was prepared to determine pre-service teachers' opinions about their own self-efficacy towards teaching. In this interview, there are questions about the subject matter knowledge and field education of the pre-service teachers, classroom management and communication, teaching process, and planning the teaching process. Prepared interview questions were presented to the opinion of two Science Education experts and experts stated that the questions could be used in this form. A pilot interview was conducted by selecting two pre-service teachers who took the teaching practice course. The data obtained from the pilot interviews were analyzed and examined whether the questions met the purpose of asking them completely. The interviews were conducted in one of the researchers' rooms at the faculty. In the beginning, a statement was made to the pre-service teachers that the information obtained would be used for scientific purposes and that their real identities would not be disclosed, the volunteer consent form was signed and a short chat was made to help them relax. The questions were asked to the pre-service teachers one by one, in line with the answers they received, it was tried to deepen the answers with the questions at the end and to gather more information about the answers. At intervals, the answers given by the pre-service teachers were repeated in different ways and confirmation was obtained that what was said and wanted to be said was the same. In the last question of the interview, pre-service teachers were given one of the acquisitions in the Ministry of Education secondary school Science course curriculum and after a few minutes of reflection, they were asked to design a teaching process related to the acquisition. The interviews lasted an average of 40 minutes. The interviews were written in the evening of the same day without any changes, and the researcher's notes were recorded in a written form. The written version of the interviews was presented to the interviewed pre-service teacher and their feedback was obtained about whether there was a missing or incorrect part and whether the statements fully met the situation to be told.

2.3. Analysis of Data

First, normality distributions were examined for the data obtained from the self-efficacy belief scale and the observation form. Results of normality analysis are given in Table 1.

Table 1. *Normality values*

Data Source	Kurtosis	Skewness	Minimum	Maximum	Median	Mean	Std. d.	Shapiro-Wilk*
Self-efficacy	.580	-1.207	88.00	94.00	93.00	92.00	2.55	.207
Observation	1.910	1.168	95	129	108.00	108.40	12.84	.484

* $p > .05$

According to the analysis results given in Table 1, the data show normal distribution. Therefore, the regression analysis method was used in the analyzes. Analyzes were made with SPSS 22 package program.

In the analysis of the data obtained from the observation form, the content analysis method was used for the descriptive statistical analysis, notes, and explanations parts. The data obtained from the interviews were analyzed with content analysis. Content analysis was

analyzed by the same researcher at two different times and by the second researcher independently from the first researcher, and the percentage of agreement between the analyzes was calculated using Miles Huberman method. The compliance percentages are given in Table 2.

Table 2. *Percentage value of between analysis*

Data Source	Percentage of Compliance at Different Times	Percentage of Agreement Between Two Researchers
Observation	86	78
Interview	82	76

When the compliance percentages given in Table 2 are analyzed, it is seen that all percentages are over 70%. It can be said that reliability is achieved if the compliance percentage is 70% and above (Miles & Huberman, 1994).

The process steps given in Figure 1 were followed in content analysis.

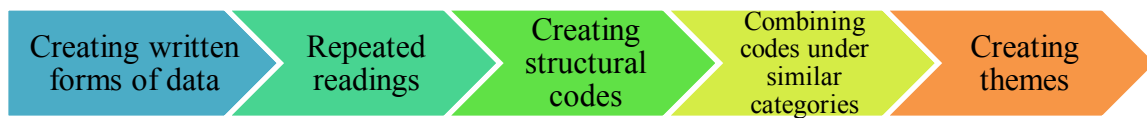


Figure 1. Content analysis stages

3. Results

3.1. Results of the first research question

The results of the regression analysis conducted in order to determine whether the teaching self-efficacy beliefs of pre-service teachers are a statistically significant predictor of their teaching skills are given in Table 3 and Table 4.

Table 3. *Predicting levels of self-efficacy beliefs on teaching skills*

Model	R	R ²	Adjusted R ²	Std. Error of Est.
1	.145	.021	-.305	14.66646

Table 4. *B and beta correlation coefficients and significance levels of self-efficacy beliefs*

Model	Predictor	B	Std. error	β	t	p
1	Self-efficacy belief	41.169	264.704		.156	.886
		.731	2.876	.145	.254	.816

When Tables 3 and 4 are examined, it is seen that pre-service teachers' teaching self-efficacy beliefs are not statistically significant predictors of their teaching skills, (R=.145, R²=.021, p>.05).

3.2. Results of the second research question

The analysis results on the level of pre-service teachers' teaching skills are given in Table 5.

Table 5. *Levels of pre-service teachers' teaching skills*

Pre-service Teacher	SFK	FE	PLTP	TP	CM	C	Total
PT-1	3.00	2.40	3.20	2.63	2.88	3.43	2.92
PT-2	3.00	2.80	3.40	2.88	2.88	2.86	2.95
PT-3	3.00	3.00	3.20	2.38	2.50	2.71	2.73
PT-4	3.50	3.20	4.00	3.38	3.38	3.57	3.49

According to the analysis results given in Table 5, the teaching skills of PT-4 are higher than other pre-service teachers, and other pre-service teachers' teaching skills are below the middle level. It was determined that pre-service teachers' planning skills of the learning process were high and their field education skills were weak compared to their other skills.

Content analysis results of teacher candidates' teaching skills are given in Table 6.

Table 6. *Content analysis results of teaching skills*

Theme	Code
Deficiencies and Errors in the Teaching Process	Not ensuring student participation
	Inability to attract attention
	Not suitable for student level
	Inability to embody abstract concepts
	Inability to identify misunderstood concepts
	Lack of active learning
	Not using instructional technologies
	Non-teaching activity
	Lack of effectiveness
	Not making a summary at the end of the lesson
	Lack of evaluation
	Not providing information about the next lesson
	Not doing homework
Lack of plan B	
Deficiencies and Errors in the Classroom Management	Failure to achieve class domination
	Not listening to the student
	Not using the time effectively
	Errors in the use of board

According to the analysis results given in Table 6, the pre-service teachers have wrong behaviors such as not ensuring student participation, not being able to attract students' attention, not being able to concretize abstract concepts, not being able to identify the wrong concepts developed in students, not providing active learning, not using instructional

technologies, choosing activities not suitable for teaching, lack of activity and at the end of the lesson, not summarizing the subject, not evaluating the level of achieving the target gains, not providing information about the next lesson, not giving homework, lack of B-plan, inability to maintain class control, not listening to the student, not using the time effectively, and erroneous behaviors in using the board. Examples of teacher candidate observation notes are presented below:

PT-2: ... She tries to attract students' attention to the lesson by using drama activity. But the drama has nothing to do with the subject. It's like an event designed for completely independent entertainment. Efficiency does not reach its purpose because it is not related to the subject. ...

PT-3: ... The subject is abstract and therefore students have trouble understanding it. He did not succeed in embodying the concepts. Students repeatedly ask about concepts. However, he makes the same statements. He cannot concretize the concepts by giving different examples and explaining them in different ways. ...

3.3. Results of the third research question

The results of the content analysis conducted to determine the self-efficacy perceptions of teacher candidates for teaching are given in Table 7.

Table 7. Results of content analysis made to determine perceptions of self-efficacy towards teaching

Theme	Category	Code
Leading the Learning Process	Supporting Learning to Learn	Using different methods and techniques Make the student active Let them do it themselves Getting them to attend events
	Supporting Active Learning	Selection of method and technique suitable for the subject Activity suitable for the topic Activity Experiments Connection with daily life
	Supporting the Development of High-Level Thinking Skills	Using discussion techniques Look critical Generating new ideas Brainstorming Asking questions To express yourself Research and project assignments
	Leading Students with Different Learning Styles / Intelligence Types	Get to know the student Determining the level of readiness Getting down to student level Choosing the appropriate method and technique for the student Diversifying the activities

		Diversifying the materials
	Assessment and evaluation	Giving feedback Reminders and repetitions Pay attention to the number of questions Identifying deficiencies Awareness of evaluative influence Not evaluating students differently for different characteristics
Ensuring Students Value Learning	Informing Students About What and Why They Should Learn	Informing about the achievements Explain why they should learn
	Ensuring Learning Motivation	Lead to the lesson Getting them to attend the class Arouse curiosity Attract attention Make you think
	Making Students Feel Valued	Valuing
	Creating New Ways For Students Who Do Not Want To Learn	Creating new ways
Answering Student Questions	Having Sufficient Knowledge On Subject And Activities	Making preparations Dominating the subject
	Answering a Question that is not Dominated	Search and answer Research together
Effective Classroom Management	Eliminating Disciplinary Problems	Communication Meeting with authorities Emergency response Substitution Meeting with the student separately
Areas that Pre-Service Teachers Find Themselves Incompetent	Teacher Related Problems	Not seeing yourself enough Information gaps Inability to prepare for the subject
	Curriculum Originated Problems	Inability to train the curriculum
	Inability to Intervene in an Emergency	Panic in an emergency
Planning the Process Suitable for Sample Acquisition	Preferred Method-Techniques for Acquisition	Instruction Demonstration Designation-make Question and answer
	Preferred Activities for Acquisition	Experiment Solving test
	Elements to Be Ignored	Active learning Learning motivation Classroom management

According to the analysis results given in Table 7, in guiding the learning process of pre-service teachers; it is stated that they will guide the learning process in the fields of supporting learning to learn, supporting active learning, supporting the development of higher-order thinking skills, guiding students with different learning styles/intelligence types, and assessment and evaluation. It is seen that pre-service teachers expressed their views on informing students about what and why they should learn, providing students with learning motivation, making students feel valued, and creating new ways for students who do not want to learn. In the theme of answering student questions, it is seen that there are opinions about having sufficient knowledge about the subject and activities, answering questions about the subject that are not mastered, and eliminating disciplinary problems in effective classroom management. Pre-service teachers consider themselves incompetent due to the problems stemming from the teacher (themselves), problems arising from the curriculum, and the inability to respond to an emergency. When the teacher candidates were asked to plan for a given example outcome, it was determined that they used the methods and techniques of lecture, question-answer, demonstration, experiment as an activity, and solve tests. In these plans, it is seen that they are lacking in the areas of providing active learning, developing learning motivation, classroom management, and assessment-evaluation. Examples of the answers given by the teacher candidates are presented below:

PT-1: ... Not every method and technique is suitable for every subject. First of all, I check whether the method I chose is compatible with the subject. I make the appropriate planning for it. ...

PT-3: ... For example, this situation happened to me during our internship. I can say that I gained experience with it. Our lecturers always gave tactics in this way in lessons. I wouldn't think it would work that well. While explaining the subject, one of the students asked a question I had never expected and did not know of. First I got stuck. I couldn't answer for a minute or two. Then I tried to answer the question with reason. I said this could be like this. But I also said that I was not sure there was just such a possibility. I proposed to explore this issue together and discuss it the next week. I searched and went. Some students had researched it. Together we answered the question. ...

PT-4: ... First I make a statement about the circuit elements and introduce their functions. Then I set up a circuit and make explanations on it. I explain by giving examples. I ask students questions about what happens if I increase the number of batteries, what happens if I increase the number of lamps. I set up the circuit and let them see if their ideas are correct. ...

4. Conclusion

In this study, in which Science teaching self-efficacy beliefs, teaching skills, and perceptions of teaching self-efficacy of pre-service Science teachers were examined, the following results were obtained from the analysis of the data obtained by applying the self-efficacy scale, making observations, and interviews.

It was determined that pre-service teachers' teaching self-efficacy beliefs were not a significant predictor of their teaching skills. Although self-efficacy beliefs have an important role in teaching (Dilekli & Tezci, 2020), it can be said that pre-service teachers' not having enough experience to demonstrate their teaching skills was effective in determining this

result. And it can be said that pre-service teachers see themselves better than they really are. Similarly, in another study, the researcher revealed that although pre-service teachers' perceptions of competence regarding class management and communication were at a high level, the findings obtained from the interviews were incompatible with the level, indicating that they had difficulties in attracting students' attention, motivation and communication while planning the lesson (Derman, 2007).

It was determined that many of the teaching skills of the pre-service teachers remained below the medium level and their skill levels were generally acceptable and intermediate, and between intermediate and good levels. This may be due to the fact that pre-service teachers remain passive, especially in the school experience lesson, participate in the lessons only as an observer and they do not have enough practice opportunities in teaching practice lessons. Because approximately two-thirds of the pre-service teachers state that they do not have enough opportunities to practice in the schools they are sent to (Eraslan, 2009).

In addition, it can be said that their teaching skills are not sufficiently developed since the pre-service teachers are not given regular feedback after their applications and their awareness of their deficiencies remains in the background.

Pre-service teachers have deficiencies such as not ensuring student participation, not being able to attract students' attention, activities not being suitable for the student level, not being able to concretize abstract concepts, not being able to identify wrong concepts developed in students, not providing active learning, not using instructional technologies, choosing activities not suitable for teaching, lack of activity, not summarizing the subject it has been put forward. At the same time, it was determined that the pre-service teachers do not evaluate the level of achieving the target gains, provide information about the next lesson, do not do homework, lack of B-plan, inability to maintain class control, not listening to the student, not using the time effectively and having erroneous behaviors in using the board. This result is in conflict with the results of the research conducted by Gürbüzürk and Şad (2009). Gürbüzürk and Şad (2009), in their study, showed that pre-service teachers' self-efficacy beliefs were moderately over the average, and student participation, class management and instructional strategies scores and professional self-efficacy beliefs were close to each other.

This result can be said that there are deficiencies in the teaching skills of pre service teachers, which is due to the fact that they have not yet gained experience in the teaching profession. Because, in a study comparing pre-service teachers and teachers' self-efficacy beliefs, it was revealed that teachers' self-efficacy beliefs were significantly higher than pre-service teachers have in the sub-dimensions of the learning teaching process, class management, communication and environment organization, and scale total scores. Habits and experiences can affect teachers' self-efficacy beliefs (Dilekli & Tezci, 2020). Pre-service teachers may also show that they have an understanding of feeling productive before completing their training in teaching skills. As a result of the interviews, it was determined that the pre-service teachers considered themselves competent in guiding the learning process, ensuring that students value learning, answering student questions, and effective class management. However, the fact that pre-service teachers neglect active learning methods and techniques in their planning of the objective is given to pre-service teachers to get a plan for lesson. They do nothing to provide motivation for learning, and do not plan for class management and assessment and evaluation show that they have deficiencies in this regard. Similarly, the deficiencies identified in the observation of teaching skills also support the deficiencies in planning. As a result, it was revealed that pre-service teachers' self-efficacy beliefs towards teaching are high, but their teaching skills and perceptions are lower than their beliefs. This result is similar to the results of Babaoğlu and Korkut's (2010) study.

In their study, they revealed that there is a low level of relationship between pre-service teachers' self-efficacy perceptions, learning styles and the learning strategies they use. However, a result was found contrary to the result that the pre-service teachers' teaching skills were at medium level and they had deficiencies in the teaching process and teaching planning. Pre-service teachers in the teaching process and their deficiencies in planning can be related to the teaching practice only in the last year, and to the fact that he/she started to experience what he/she learned theoretically for the first time in real classrooms. An individual's self-efficacy belief affects her/his perception, motivation, and performance in many ways (Morgil, Seçken & Yücel, 2004). Although this situation has a strong belief in competence among pre-service teachers, it is thought that their deficiencies in the learning-teaching process can be improved by directly experiencing them. Therefore, it may be suggested to provide prospective teachers with more opportunities to develop the skills they lack. As a result of the research, pre-service teachers neglect active learning methods and techniques, do not do anything to provide motivation for learning, do not plan for class management and assessment and evaluation, eliminating the deficiencies in this regard, and a method for teacher candidates for gains within the scope of teaching practice they may be asked to prepare a content such as technical, measurement and evaluation and carry out this content with students in the school environment. In this way, it is thought that the deficiencies in the preparation and process can be eliminated by evaluating them. It may be suggested to give opportunities for this. This is because tools such as feedback, various instructional design elements and integrated support systems that can be used to encourage positive efficacy beliefs, improve teacher's competence and improve student outcomes indicate that they can develop their potential. At the same time, in teacher training programs, the content and execution of the courses that aim to make candidates more competent in this respect can be reviewed. In these courses, student motivation, which is an important variable in ensuring student participation and class management, can be taught as a weighted subject. Qualitative studies can be conducted to examine in-depth the situations related to teacher candidates' self-efficacy beliefs. It is an important issue whether the self-efficacy belief of teachers is transformed into behavior and whether it is reflected in class practices. For this reason, the educational beliefs adopted by teachers with different research techniques such as observation can be compared with their class practices and their consistency can be further examined.

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