

Investigation of Effective Teaching According to Pre-Service Teachers' Views and Their Teaching Methods

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Abstract

The study examined how prospective teachers defined effective teaching, the methods and techniques used by pre-service teachers during their teaching practicum and their reasons to use them, and how these instructional techniques fit specific teaching principles. The participants in this study were 18 university seniors registered in the Primary Education Department at a state university. The data for this qualitative study were obtained from an information form completed by participating pre-service teachers, their prepared lesson plans, video recordings of practicum teaching experiences, and observation notes. The collected data were analyzed through descriptive analysis. Findings showed that pre-service teachers often mentioned following a student-centered approach. They emphasized the roles of an effective teacher as using different teaching methods, techniques, and materials, as well as guiding students, making learners more active, and paying attention to students' individual differences. In terms of students' roles in effective teaching, they mentioned students should actively participate in class, take responsibility for learning, think critically, and transfer their learning to new situations. It was determined that pre-service teachers had sufficient knowledge of the selection of methods and techniques. Pre-service teachers frequently included the 5E learning cycle model, question-answer, and drama methods in their lessons. In their suggestions, teachers frequently included the 5E learning cycle model, question-answering, and drama methods in their lessons. The findings of the study were that pre-service teachers should be generous in providing feedback to learners while they are teaching their lessons, and courses should be taught with a student-centered approach by using different methods and techniques, as well as being supported with visual elements. Additionally, pre-service teachers should be supported in using the theoretical knowledge they have learned in their courses and extending the period of teaching time within the scope of teaching practicum courses.

Keywords: Effective teaching, Pre-service teacher, Teaching methods, Teaching practicum course

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Introduction

Individuals learn in different ways, and the use of a single teaching method for teaching every subject may not always lead to success. Therefore, to ensure effective teaching, it is important to utilize a variety of teaching methods and techniques. Effective teaching requires knowledge and understanding of the subject, as well as an understanding of the needs and learning styles of individual students. Additionally, teachers must be flexible, creative, and willing to experiment with different teaching methods to keep their students active during the learning process (Dogani, 2023). Therefore, effective teaching refers to the teaching activities that promote students' learning and development through effective preparation, teaching activities, and evaluation. In other words, effective teaching is not only a teaching idea but also a teaching method and teaching skills (Zhao, 2023).

Teaching methods are consciously selected and monitored paths used to achieve goals such as solving a problem, concluding an experiment, learning a subject, and/or teaching a subject (Oğuzkan, 1993). In other words, a teaching method can be defined as the shortest way to achieve a specific instructional goal (Demirel, 2015). Technique, on the other hand, is the application of a method (Saygılı, 2015). As a result, the common function of teaching methods and techniques is to make learning objectives achievable (Gözütok, 2017). Teaching methods can vary from traditional approaches, in which students are passive while the teacher is in charge, to contemporary approaches, where the learners' interests and levels of thinking are considered (Burden & Byrd, 2010). In choosing a method for use in teaching, many factors, such as the teacher's knowledge of methods, infrastructure of the school, materials provided by the school, number of students, targeted goals, characteristics of the subject, readiness level of the students, as well as the time and cost involved, must all be taken into consideration (Aydın, 2022; Aykaç, 2009).

The courses of Teaching Practicum I and II, which are included in the teaching profession courses of the primary school teacher training program, are conducted for a total of eight hours per week, with two hours devoted to in-person university course lectures and six hours per week spent in teaching practicum courses within primary school classrooms. Within the scope of the Teaching Practicum I course, pre-service teachers are required to visit schools, meet with teachers, examine yearly plans, review teachers' seminars, observe different subjects (classroom management, asking questions, etc.), prepare worksheets, and prepare assessment materials. They are also required to prepare daily lesson plans and an evaluation report for any activities carried out during the semester, and ultimately organize all their reports and activities into portfolios for review. Within the scope of the Teaching Practicum II course, it is also necessary to visit the school and meet teachers, students, and administrators. This is done to determine the time and topics of lessons they are to teach during their teaching practicum school visits. After pre-service teachers complete two weeks of observation, they then teach lessons every week under the supervision of an assigned classroom teacher and in accordance with the guidelines set forth by the course instructor from their faculty (Council of Higher Education, 2019).

In Türkiye, the general competencies and special field competencies for the teaching profession were determined through meetings and workshops held in participation with the Ministry of National Education Directorate of Teacher Training and Education as well as several experts and teachers as a way of reaching a compromise regarding qualifications for graduating pre-service teachers from every education faculty throughout the country (MoNE, 2006). In 2017, the General Directorate of Teacher Training and Education of the Ministry of National Education updated their general qualifications for the teaching profession under the headings: (1) professional knowledge; (2) professional skills; and (3) attitudes and values. In this current study, in connection with the teaching practicum course, the researchers focused on the area of professional skill competence and, in doing so, paid special attention to the areas of planning teaching and managing learning time. It was thought that in the Teaching Practicum course, the performance of pre-service teachers in these two sub-competency areas could be improved, observed, and evaluated.

When research on this subject is examined, it is emphasized in some of the findings that pre-service teachers do not consider themselves competent in using modern teaching methods and techniques. For example, in Soyly's study (2009), while mathematics pre-service teachers find themselves competent or partially competent in using lecture as well as question-answer methods and techniques for mathematics instruction, they believe themselves to be inadequate in approaches, methods, and techniques such as the constructivist approach, learning through discovery, cooperative learning, demonstration, educational games, case study, and posing and solving problems. In another study, pre-service teachers state that teaching should be done in a way to make students active in accordance with the constructivist approach. However, after examining the records of these pre-service teachers'

classroom teaching activities, it is observed that 66% of the teaching methods applied in the classroom are traditional methods, 17% are teaching methods that exemplify the constructivist approach, and the remaining 17% are mixed methods (Çam, 2015). In a similar study, mathematics and science pre-service teachers emphasize that teaching should be student-centered but instead choose more traditional methods because of the high number of students in class as well as having a heavy curriculum load to cover (Özgün-Koca & Şen, 2006). Chai, Teo, and Lee (2010) also state that pre-service teachers who believe that information will be transferred directly prefer to use traditional teaching methods, while those who focus on the process and efforts of students support teaching methods following the constructivist approach. In Demircioğlu, Genç, and Demircioğlu (2015), the knowledge of university seniors from the Social Studies Education Program about teaching strategies, methods, and techniques is investigated. It is determined that pre-service teachers have general knowledge about teaching strategies, methods, and techniques that are an important part of pedagogical content knowledge; however, those same pre-service teachers have problems listing the methods and techniques used in teaching approaches such as teaching through discovery, lecture, and inquiry. In addition, it is understood that pre-service teachers have difficulty defining the concept of teaching strategy but can explain the concept of teaching techniques.

It is shown in studies where the relationship between theory and practice in teacher education is examined that a balanced link can be established between theory and practice when theoretical knowledge is applied in real learning conditions and/or within classrooms, as well as when discussions about the practices being used are carried out during the lessons (Beck & Kosnik, 2002). In a similar study, Sunal (1980) finds that primary school pre-service teachers who learn lessons about teaching methods in practice schools are more successful in their teaching skills than pre-service teachers who learn lessons about teaching methods at the university campus. Ünver (2014) emphasizes the fact that faculty members present exemplary practices that require the use of the theoretical knowledge they teach and that they conduct applied studies with pre-service teachers in order to effectively establish a link between theory and practice. In Şahin and Kartal's study (2013), pre-service teachers and newly graduated teachers emphasize that to make the profession more successful, teaching courses should be based on practice rather than theoretically taught in university classrooms. In Koçak, Yıldırım and Mindivanlı-Akdoğan's study (2023) on pre-service teachers' opinions regarding the Teaching Practicum Course, Participants in the study came from various teaching departments and mentioned that they were able to put their theoretical knowledge into practice and were able to use several teaching methods. Similar findings were obtained in Zeybek and Karataş's (2022) study with pre-service teachers from different teaching departments. However, Akgül, Ezmeçi, and Akman's (2020) study of early childhood pre-service teachers stated that their undergraduate courses were theoretical. Due to a lack of experience with activities throughout the courses, they had difficulty during their teaching practicum courses. Thus, as Hoban (2005) stated, university and school cooperation should be provided to fill the gap between theory and practice because one of the main factors for success in teacher education is ensuring this cooperation.

In a review of other studies, the effects of teaching profession courses on pre-service teachers' competencies for the teacher-learning process (planning, application, and evaluation) were found to lead pre-service teachers to gain about half of the performance indicators for the teaching-learning process (Atik Kara & Sağlam, 2014). In another study, after completion of a teaching practicum course, pre-service teachers thought that they were successful in motivating students, being good listeners, and explaining complex topics, but they also stated that they had difficulties in writing lesson plans as well as planning and implementing activities that made students active (Ng, Nicholas, & Williams, 2010).

In Arıkan's study (2009), it is shown that these pre-service teachers mostly use the lecture method ($n = 28$) and the question-answer technique ($n = 24$). Aslan and Zırhlıoğlu's (2019) study of pre-service teachers critiqued themselves for not using different teaching methods during their teaching practicum courses. In another study, Turkish language pre-service teachers criticized language arts teachers for using mainly direct instruction and question-and-answer techniques (Toksun, 2020). In another study, Bilen (2014) finds that students in the Primary School Mathematics Teacher Department mainly use the question-answer technique when teaching, while students in the Instructional Technologies Department use educational technologies and visual aids. As seen in previous research, the methods and techniques used by prospective teachers are extremely limited.

Purpose of the Study

As a result of examining related research, it was observed that there was a dearth of studies regarding the variety of teaching methods used by pre-service teachers as well as whether these teaching methods have been used effectively. This statement was also posited in other studies (Şallı-Çopur, 2008; Yıldırım, 2013). However, it was important to determine how pre-service teachers chose specific theoretical approaches, methods, and techniques that they had learned through their courses, as well as how they planned to implement their choices into their

teaching practicum. Also important was how pre-service teachers reflected on the approaches, methods, and techniques they had used for practicum instruction. Importantly, in studies carried out by the Ministry of National Education to determine the general competencies for the teaching profession, the competency areas were updated, and in particular, one competency of interest was professional skills, which includes planning instruction as well as managing the teaching and learning processes (MoNE, 2017). As part of their teacher training, pre-service teachers are expected to perform and achieve certain performance levels in each of these proficiency areas. As a result, it is important for pre-service teachers to obtain these expected qualifications during the teaching-learning process.

It is important and necessary that there is a link between theory and practice so that the knowledge and skills learned in teacher education programs are not only effective but also retained. Therefore, in this current research, the purpose was to determine which approaches, methods, and techniques were used by pre-service teachers during the teaching portion of the Teaching Practicum II course. For this reason, the researchers in this study observed pre-service teachers' teaching practices as well as reviewed their lesson plans. The following research questions were considered to carry out the stated research purposes:

1. How do pre-service teachers describe effective teaching?
2. What did pre-service teachers take into consideration in choosing teaching methods?
3. What were the methods and techniques used by pre-service teachers when teaching courses?
4. Were the methods and techniques pre-service teachers used during their teaching practicum appropriate to the teaching principles (i.e., purposefulness, being relative to students, making students active, and being concrete)?

Method

In this qualitative study, data was collected and analyzed through a case study. A case study is an empirical research method that studies a current phenomenon within its own context. It is used in cases where the boundaries between the phenomenon and its context are not clear and there is more than one evidence or data source (Yıldırım and Şimşek, 2021). This study was designed according to the holistic single-case design, in which there is a single unit of analysis (such as an individual, school, program, or institution) (Yıldırım and Şimşek, 2021). In this research, the practices of pre-service teachers in a classroom teaching program at a faculty of education, where they used various approaches, methods, and techniques within the scope of the Teaching Practicum II course, were accepted as a unit of analysis. In this study, the stages that needed to be followed for a case study, such as developing research questions, determining the units of analysis, determining the situation to be studied, selecting individuals to participate in the research, collecting, analyzing, interpreting, and reporting the data, and reporting, were followed.

The data for this qualitative study were obtained through observation and document analysis. Pre-service teachers' in-class teaching practices were observed, and video recordings were made of the observed classroom instruction and activities. The information form, lesson plans, and field notes were obtained and analyzed via document analysis.

Participants

Participants in this study consisted of 18 pre-service teachers who studied in the Department of Primary Education at a Turkish state university and were enrolled in the Teaching Practicum II (TP II) course. Participant students (12 female and 6 male) were determined on a voluntary basis. Most of the participants were women, which was due to a greater number of female students being enrolled in the primary education department. The ages of students varied from 21 to 24, with the median age being 23.5. Academic achievement scores for the participants varied from 2.66 to 3.33 (the median achievement score was 2.95).

For expediency and practicality, a criterion sampling method that is one of the purposeful sampling methods and a convenient sampling method was utilized to conduct the research as well as help the pre-service teachers feel more comfortable and behave naturally by working with familiar instructors (Yıldırım & Şimşek, 2021). Criteria for choosing participating students were previously taking and successfully passing the teaching methods and principals course, enrolling in the TP II course, going to primary schools once a week, and volunteering to participate in this research. Each participant was informed that they would be observed at least once during the

semester while enrolled in the TP II course. The pre-service teachers were each observed for at least 40 minutes at a time, and they chose when and which course or subject they preferred to teach.

Data Collection

In this qualitative study, pre-service teachers' teaching practices were recorded, and their written lesson plans were reviewed. Data from the study was collected through real-time video recordings of pre-service teachers' lessons as they were presented during their teaching practicum lessons. Also, an information form was completed by each participating pre-service teacher, and field notes were compiled by each researcher according to field observations they made during the pre-service teachers' teaching practicum lessons.

The information form consisted of two parts and was prepared by the researchers. The first part of the form contained demographic information, while the second part contained three open-ended questions: a) how pre-service teachers defined the nature of effective teaching; b) the desired roles of teachers and students; and c) what they paid attention to when selecting teaching methods. In the preparation and finalization of the form, both relevant research findings and expert opinions (from a faculty member working in the field of primary education, a faculty member working in the field of program development, and a faculty member working in the field of measurement and evaluation) were taken into consideration.

Each pre-service teacher was observed during their presentation of classroom instruction on a specified date of his or her choice, and the classroom observations lasted for approximately 40 minutes. Prior to the researchers' field observations, the pre-service teachers were asked to prepare a lesson plan that they would follow during their classroom instruction while the researchers observed their lessons. In addition, all lessons observed by the researchers that had been prepared and carried out by the participants were video recorded. Throughout the lessons, the researchers also kept field notes.

Data Analysis

The data obtained from the field observation video recordings, the researchers' field notes, and the information form completed by the participants were analyzed through descriptive analysis. The lessons prepared and presented by the participants were video recorded, and throughout the course, researchers took specific field notes regarding their in-class observations. According to the research protocol outlined in descriptive analysis, a framework was first created, data was processed according to the thematic framework, and findings were identified and then interpreted (Yıldırım & Şimşek, 2021). Depending on this analysis technique, themes were created in relation to research questions established in advance. Findings are defined and interpreted under relevant themes. In addition, the teaching videos of all pre-service teachers and written lesson plans were individually reviewed and coded by two researchers according to the established research questions. The consensus between the two researchers was found to be 96%. According to Yıldırım and Şimşek (2021), the interrater reliability level should be at least 70%. Thus, in this study, it can be said that the level of internal reliability was high. While analyzing the field observation video recordings, the field notes from each researcher were also analysed by both researchers.

As a result of the descriptive analysis, frequencies and percentages related to the data were determined. While defining the findings, examples regarding specific themes are provided in the relevant tables. Since each participant listed more than one method and/or technique to be utilized for instruction, the answers provided in the presentation of some findings were greater than the total number of participants. The first and second research questions were answered through data collected from the prepared information form, while the third and fourth questions were answered via classroom observations as well as information gathered through video recordings and field notes from the participants' classroom instruction. Since the data of this study were collected before 2020, Ethical Approval was not obtained.

Results and Discussion

In this qualitative study, the approaches, methods, and techniques utilized by pre-service teachers during their teaching practicum internships, how pre-service teachers determined effective teaching, and what roles students and teachers desired were examined. The findings of the study were presented in line with the research questions. The answers provided to the first research question, "*How do pre-service teachers describe effective teaching?*" are listed in Table 1.

Table 1. Definition of effective teaching according to pre-service teachers

Expressions Used to Describe Effective Teaching	f
Being student-centred	6
Using different teaching methods, techniques, and materials	
Being compliant with program requirements and expected gains	4
Ensuring learning through hands-on experiences	
Ensuring teacher control	2
Considering individual differences	
Motivating students	
Being planned	
Providing a democratic environment	
Ensuring teacher-student interaction	
Being interesting	
Not being based on memorization	
Enabling the discovery of information	1
Being suitable for teaching principles	
Providing process-based evaluation	
Being associated with daily life	
Combining theory and practice	
Managing time effectively	
Realizing the social and affective characteristics of learners	
Considering learners' levels of development and readiness	

In this study, as it can be seen in Table 1, the most important feature reflected by the pre-service teachers regarding effective teaching is being student-centered ($f = 6$). In terms of being student-centered, one of the pre-service teachers stated that, *"In my opinion, the most basic principle of effective teaching is to be able to convey to the audience that they have to learn this information, to inform them where and how to use this information, and to motivate them."* Using different methods and tools was emphasized by a total of four pre-service teachers. However, other important features such as motivating students, being planned and programmed, providing a democratic environment within the classroom, providing effective teacher-student interaction, being practical, discovering information, evaluating the process, being associated with daily life, using time effectively, and being aware of the individual differences of learners were each mentioned once. Effective teaching also means that the teaching is appropriate according to the targeted subject or achievement, the students' previous knowledge, and their learning level. Basic concepts in effective teaching focus on: (1) active learning time and the quality of teaching; (2) conducting teaching as a manageable activity; (3) necessary skills teachers should have; and (4) choosing activities according to students' motivation, attention level, interests, and needs (Kyriacou, 2010). Active learning time is considered to be motivated by the voluntary participation of students throughout the lesson. The skills a teacher should have for effective teaching include planning and organizing teaching, identifying and using methods to achieve maximum learning, monitoring and evaluating student learning, communicating effectively, motivating students, managing the classroom effectively, and working on improving students' learning and achievement (Irnidayanti & Fadhilah, 2023; Lai & Peng, 2020; Moore, 2014; Moore, 1989). In addition to these features, Strong, Gargani, and Hacıfazlıoğlu (2011) also emphasize being able to use technology effectively, developing high expectations for learning, and being sensitive not only to academic but also to the social and individual needs of learners. According to Moore (2014), the components of effective teaching are having field knowledge, ensuring active learning, and using teaching methods and strategies. It is seen that the answers of pre-service teachers who participated in this study were in line with these components.

Pre-service teachers were also asked to list what roles teachers and students should have for effective teaching. Their responses regarding the role of teachers in effective teaching are provided in Table 2.

Table 2. Teachers' roles in effective teaching according to pre-service teachers

Teachers' Roles in Effective Teaching	f
Using different teaching methods, techniques, and materials	8
Becoming a guide	7
Making the student active	6
Paying attention to individual differences	5

Knowing the structure of society	
Preparing an effective teaching plan	2
Knowing the ways students learn and acting in accordance with program requirements	
Criticizing and questioning	
Following technological developments	
Processing the course according to student level	
Having empathy	
Respecting students' thoughts	1
Being a leader	
Having effective communication skills	
Being planned	
Being open to learning	
Having knowledge of the field, professional knowledge skills, and general culture	

When asked about teachers' roles in effective teaching, the use of different teaching methods, techniques, and materials was the most frequently listed role ($f = 8$). Being a guide was the second most popular answer ($f = 7$). For example, the 10th pre-service teacher emphasized that *"the teacher should make the students aware of what is important for group and individual success by working collaboratively with his or her students."* Following this role, making the student active ($f = 6$) and giving importance to individual differences ($f = 5$) were listed. When Table 2 is closely examined, roles such as preparing an effective teaching plan, following technological developments, communicating effectively, and establishing empathy were among the least expressed ones. Additionally, common personality traits of teachers for effective teaching, such as being creative, energetic, organized, social, and patient (Ornstein & Lasley II., 2004) and having a high level of self-efficacy (Bright, 2011), were not mentioned in any of the responses by pre-service teachers in this current study. However, it was still recognized that most of the roles that pre-service teachers describe as effective teacher roles are supported in the literature. For example, among the roles required to be an effective teacher, planning and presentation skills, organizing the classroom environment, and teaching techniques are among the most emphasized (Moore, 2014; Ornstein & Lasley II., 2004). Planning and presentation skills include field knowledge and pedagogy, knowledge of how students learn, setting appropriate goals, knowing ways to reach necessary resources, and using reliable and effective assessment methods. Skills for organizing the classroom environment include considering the individual needs of students, encouraging students, caring about students' efforts, trying to improve the quality of teacher-student and student-student relations, using the classroom space effectively, helping students with their personal and educational problems, and managing the classroom effectively. Skills related to teaching techniques include actively involving students in the learning process, providing information about the learning process, using different types of questions, having strong oral and written communication skills, and organizing lessons according to feedback. Additionally, Ko, Sammons, and Bakkum (2014) listed the roles of effective teachers, including informing students regarding the instructional objectives and their responsibilities, implementing their instructions starting from students' prior knowledge and based on students' needs, providing feedback, and teaching metacognitive strategies for students to use. Responses according to pre-service teachers regarding the roles of students' roles in effective teaching are provided in Table 3.

Table 3. Students' roles in effective teaching according to pre-service teachers

Students' Roles in Effective Teaching	f
Participating actively in the course	6
Being responsible	3
Criticizing and questioning	2
Transferring information to real-life	
Following technological developments	
Having empathy	
Researching	
Being willing to learn	
Discovering information	1
Having the ability to work in a group	
Obeing classroom rules	
Constructing knowledge	

When asked about the roles of students in effective teaching, the most popular role was the active participation of students ($f = 6$). Then, the roles of being responsible ($f = 3$), criticizing or questioning, and implementing information ($f = 2$) were mentioned. In terms of being responsible for their own learning, the 17th pre-service teacher stated, *"The student should make preparations to reach the information."* Roles such as following

technological developments and having empathy were stated the least, like the effective teacher roles previously listed. In addition to these roles being stated, researching, being willing to learn, exploring knowledge, working in a group, following classroom rules, and constructing knowledge were also among the least listed roles. In effective learning, students have duties and responsibilities as well as teachers do. Among the roles they have to fulfill are to produce problems or tasks to work on, work on solutions to problems, establish relationships between previous learning and new learning, be aware of their own learning process, associate what they have learned with their own lives, evaluate themselves and their peers, think critically, and have the ability to question (Bıyıklı, Veznedaroğlu, Öztepe & Onur, 2008). In this study, it was recognized that pre-service teachers expressed fundamental roles such as criticizing, questioning, and putting knowledge into practice.

The answers provided regarding the second research question, “*What did pre-service teachers take into consideration in choosing teaching methods?*” are provided in Table 4.

Table 4. Pre-service teachers’ considerations when choosing teaching methods

Considerations When Choosing Teaching Methods	f
Feature of the subject	8
Students’ level of readiness	7
Number of students	5
Objectives	4
Teacher’s knowledge of using methods	2
The school’s infrastructure and the materials	1
Time	1
Cost	1
Whether it attracts students’ attention	1

As seen in Table 4, pre-service teachers’ comments were organized into nine categories, starting from the most frequent to the least frequent: (1) feature of the subject to be taught ($f = 8$); (2) students’ level of readiness for the subject ($f = 7$); (3) number of students in the class ($f = 5$); (4) achievements targeted ($f = 4$); (5) teacher’s knowledge of using methods ($f = 2$); (6) the school’s infrastructure and the materials it provides ($f = 1$); (7) time ($f = 1$); (8) cost ($f = 1$), and (9) attracts students’ attention ($f = 1$). When deciding on teaching strategies and methods to be utilized in teaching, Gözütok (2017) and Aydın (2022) recommend considering the objectives of a lesson, student readiness, learning styles, duration of the lesson, and the number of students. According to these recommendations, it was determined by the researchers that the factors pre-service teachers in this study considered when choosing their teaching methods were compatible. However, it was found that the pre-service teachers did not take into consideration factors such as the infrastructure of the school and the materials provided, as well as time, costs, and how interesting the method was.

Within the scope of the third research question, “*What were the methods and techniques used by pre-service teachers when teaching courses?*” the pre-service teachers were first asked to list the approaches, methods, and techniques they knew and explain which ones they preferred to use while preparing their lesson plan and/or activities. The methods and techniques listed by the pre-service teachers are provided in Table 5.

Table 5. Teaching methods and techniques listed by pre-service teachers

Listed Methods and Techniques	f
Question-answer	9
Drama	
Lecture	8
5E learning cycle	
Six thinking hats technique	7
Station	6
Brainstorming	5
Demonstration	4
Discussion	
Case study	
Talking circle	2
Developing opinions	
Role playing	

Working in groups	1
Educational games	

As seen in Table 5, the most frequently listed methods were question-answer and drama ($f = 9$), while the least listed methods were working in groups and educational games ($f = 1$). In addition to listing the methods they knew, the pre-service teachers were asked to indicate which methods they preferred to use in their lesson plans. The methods preferred to be used in lesson plans by the pre-service teachers are provided in Table 6.

Table 6. Preferred teaching methods and techniques in pre-service teachers' lesson plans

Preferred Methods and Techniques	f
5E learning cycle	12
Question-answer	6
Station	5
Drama	
Lecture	4
Discussion	3
Six thinking hats technique	2
Case study	
Demonstration	1
Brainstorming	
Role playing	
Working in groups	

It can be gleaned from the information listed in Table 6 that the teaching method most preferred by pre-service teachers was the 5E learning cycle model ($f = 12$), while demonstration, brainstorming, role playing, and group work ($f = 1$) were the least preferred teaching methods and techniques. Although question-answer and drama methods were the most frequently listed methods, when the teaching methods utilized in the lesson plans were investigated, it was recognized that they were mentioned less than the 5E learning cycle model and ranked second and third in the number of listed teaching methods and techniques. While the six thinking hat techniques and lecture methods were listed at the top, they were among the methods not as preferred in lesson planning. Similarly, while brainstorming was mentioned five times and demonstration technique was listed four times as teaching methods and techniques known by pre-service teachers prior to lesson planning, they were used only once in the preparation of lesson plans. Although the talking circle, developing opinions, and educational games were listed by pre-service teachers as known teaching methods and techniques, they were not included in any lesson plans. When the methods pre-service teachers' used in lesson plans were analyzed, it was observed that pre-service teachers mainly used methods that created a dynamic where the students were active, such as the 5E learning cycle model, question-answer, station, and drama. Importantly, the 5E learning cycle model, question-answer, station, and drama, which were frequently preferred by pre-service teachers, are also widely recommended by educators because they develop students' analytical and critical thinking skills, communication, and higher-level thinking skills, as well as aid students in putting events and thoughts into logical order, enable students to actively participate in the lesson, promote students to work with others, lead to increases in students' creativity and motivation, and promote students to be more social (Aydın, 2022; Dirik, 2014; Gözütok, 2017; Güven, 2011). In addition, a teacher who aims to teach through discovery by the students within the learning process is expected to give priority to group work, discussion methods, and project work (Gözütok, 2017). However, only three of the pre-service teachers used the discussion method, and one pre-service teacher utilized group work, while no pre-service teachers included project work in their lesson plans.

However, Koç (2015) posits that teachers should use different methods and techniques to meet the differing needs of students. In Akgün, Hamutoğlu, and Yıldız's (2015) study, it is seen that most teachers use the lecture method, while case studies, demonstration, problem solving, and discussion methods are followed in subsequent order. In the same study, the technique most frequently used by teachers is the question-answer technique. Other techniques that follow the question-answer technique are brainstorming, role-playing, drama, and educational games. Additionally, in Karasu Avcı and Ketenoğlu Kayabaşı's (2019) research with primary school teachers, it was seen that classroom teachers frequently use direct instruction, question-answer, drama, and discussion methods in Turkish; direct instruction, question-answer, and problem-solving methods in mathematics; direct instruction, question-answer, and role-playing in life studies; lecture, question-answer, and drama in social studies courses. Primary school teachers stated that they used experiments, question-answering, and lecture methods in science and technology courses. On the other hand, in the research conducted by Şahin and Ulucan (2023), it was determined

that the methods and techniques most used by primary school teachers were drama, brainstorming, discussion, problem solving, role playing, case study, and station methods.

It is seen that pre-service teachers need more support in effectively utilizing teaching methods and techniques. For example, in Demircioğlu, Genç, and Demircioğlu's study (2015) with university seniors enrolled in a Social Studies Teaching Program, the pre-service teachers do not have enough knowledge about teaching strategies, methods, and techniques. These findings are also emphasized in studies by Çelikkaya and Kuş (2009) as well as Akpınar, Çolak, and Yiğit (2012).

When the methods used in pre-service teachers' written lesson plans were examined, it was observed that methods that lead to students being active, such as the 5E learning cycle model, question-answer, station, and drama, were all heavily used. These methods, which were frequently used by pre-service teachers in this current study, are seen as a promising finding in other studies because they support the fundamental skills of students such as socializing, being creative, working in a group, and establishing a cause-and-effect relationship (Aydın, 2022; Dirik, 2014; Gözütok, 2017; Güven, 2011). However, it was observed that project-based learning, which is one of the methods that enables a student to discover and learn, was not included in any lesson plans in the current study. One reason for this may be that it takes a lot of preparation and a long time in the classroom to conduct a course using this approach.

In this current study, the pre-service teachers were also asked to explain the rationale behind the methods and techniques they chose. The reasons for pre-service teachers are provided in Table 7.

Table 7. Reasons why pre-service teachers prefer teaching methods and techniques used in lesson plans

Reasons for Choosing Methods and Techniques	f
Providing effective teaching	7
Making the student active	
Increasing the ability to work in a group	4
Ensuring teacher-student/student-student interaction	3
Ensuring learning through hands-on activities	
Considering individual differences	2
Allowing students to express themselves	
Letting students discover information	
Making students motivated	
Keeping the student's attention alive	
Improving creativity	
Developing awareness of respect for different ideas in students	1
Letting students take responsibility	
Associating learning with daily life	
Seeing the strengths and weaknesses of the student	
Trying to make the student question, research, and be self-confident	

When the information presented in Table 7 is reviewed, the most important factors affecting the choice of methods by pre-service teachers were providing effective teaching and making the student active ($f = 7$).

However, important factors such as motivating students, developing creativity, developing awareness of respect for different ideas in students, giving responsibility to students, associating learning with daily life, seeing the student's strengths and weaknesses, and ensuring that the student is questioning, researching, and self-confident were mentioned only once. Although these opinions from the pre-service teachers were related to the features of effective teaching stated above, these features were not sufficiently emphasized.

In the third research question, focus was placed on which methods and techniques were used in the classroom by the pre-service teachers while they were teaching their planned lessons. Researchers analyzed whether the methods and techniques used by participants changed according to the subject they were teaching. According to the observations, pre-service teachers most often prepared and taught Turkish lesson plans ($f = 8$). Secondly, it was observed that the preferred course was life studies ($f = 4$), and the following subjects were social studies ($f = 3$), science ($f = 2$), and mathematics ($f = 1$). According to the analysis of the instructional videos watched by the two researchers, pre-service teachers used seven methods and techniques in the 18 lessons that were taught. The most common of these were question-answer (44%), lecture (21%), and group work (19%). Individual study (5%), station technique (3%), drama (3.6%), and fishbone diagram (2.5%) were found to be used less frequently.

Additionally, when teaching methods in diverse subjects were analyzed, it was seen that pre-service teachers mainly used the question-and-answer method (50%) and direct instruction method (24%) in the Turkish language course; again, mainly the question-and-answer method (36%) and group study (32% in the life studies course); question-and-answer method (30%) and direct instruction method (20%) in the social studies course; question-and-answer method (45%) and direct instruction method (22% in the science course); and question-and-answer method (82%) and direct instruction method (18%) in the math course. A similar finding was found in Erdem and Bayraktar's (2019) study. Analyses of 26 pre-service teachers' lesson plans showed that pre-service teachers used mostly the question-and-answer technique. The lecture method followed it as the second most commonly used method. In another study, Yıldırım and Demir (2003) examine the methods used by teachers in science lesson instruction and state that the most frequently used method is lecture. The question-answer method frequently used by pre-service teachers is also listed among the methods used by teachers. It is also recognized that teachers do not use teaching methods and techniques such as discussion, drama, case study, and brainstorming frequently enough. Similarly, in studies by Özer (2013) and Köse (2011), it is observed that pre-service teachers prefer to use the methods of lecture and question-answer, while in other studies conducted with Social Studies pre-service teachers, it is determined that pre-service teachers adhere to traditional methods (Akpınar, Çolak & Yiğit, 2012; Çelikkaya & Bird, 2009). Additionally, in another study (Demirhan İşcan & Keleşoğlu, 2017), it is seen that even though pre-service teachers prefer using the 5E learning cycle method when teaching life studies and social studies, they mainly focus on the explanation stage, in which they use the lecture method frequently. Similar circumstances are also found in Arıkan's (2009) study with pre-service technology teachers.

A review of all the observed lessons revealed that the question-answer method was the most popular teaching method in all the recorded lessons. A similar finding is observed in Bilen's (2014) study, where it is emphasized that pre-service teachers in a primary mathematics department most often use the question-answer method while teaching their courses. In another study, Akgün, Hamutoğlu, and Yıldız (2015) also emphasized that the question-answer method is the teaching technique most frequently used by early childhood, mathematics, Turkish, and Social Studies teachers.

In order to answer the fourth question of the research, "*Were the methods and techniques pre-service teachers used during the internship appropriate to the teaching principles (i.e., purposefulness, being relative to students, making students active, and being concrete)?*" the lesson plans prepared by pre-service teachers were examined. In accordance with the purposefulness principle, the methods and materials used were expected to be motivating for students to achieve the targeted achievement. For the instruction to be relevant to students, this principle means that the selected topics and methods used in teaching are appropriate for the level, interests, and needs of the students. The principle of activity is that students in the class take an active role in the learning process, and instruction is not solely teacher-centered, while the principle of concreteness is that students start from concrete experiences and move towards abstract ideas (Aykaç, 2009; Dirik, 2014).

When the overall courses were considered, it was observed that pre-service teachers most often prepared and presented their lessons in accordance with the teaching principles listed above in all the observed courses, except for mathematics. In the Turkish lessons that were observed over eight lesson hours, only two observations were not considered to comply with these principles. In one of these instances, one pre-service teacher used words that were above the students' level when teaching synonyms and antonyms (*e.g., sample, anxiety*). In another example, although students said that there were many unknown words in the text, the pre-service teacher explained only two of the mentioned words (*geologist and ballet dancer*). For this reason, it was determined that the applications made in those two examples contradicted the teaching principle of being relative to the students.

In the Life Studies course, which was observed over four separate hours, it was determined by the researchers that only once was the pre-service teacher's lecture not compliant with the principle of being relative to the students. In this example, the 2nd grade students could not understand the instruction provided by the pre-service teacher and, as a result, did not successfully complete the assigned activity (*classification of professions from past to present*).

When observations were made regarding the Social Studies instruction that took place over three lesson hours, an example that did not conform with appropriate teaching principles was found. In this example, the principle of concreteness was ignored in questions asked by the pre-service teacher regarding *National Sovereignty* and the *Parliament* because they were above the students' level. As a result, questions regarding this topic remained abstract to the students.

An example that did not comply with the teaching being relative to students was observed in one course hour of science instruction. In this example, students were not able to answer questions such as, “*How many times does the Earth rotate on its axis when it completes a full orbit around the Sun?*” and “*What are the consequences of the Earth's curvature?*” These questions were found to be above the students’ level.

In the mathematics course, which was observed once, the principles of being in line with the purpose of instruction and making students active during the lesson were met. However, during this lesson, it was also recognized that the principle of the instruction being relative to students as well as its concreteness were not met. For example, it was observed that decimal fractions were only explained on the number line, and following the description, the pre-service teacher asked questions, but no concrete hands-on materials were used. As seen in the examples provided above, the pre-service teachers were not successful in providing students with instruction that met the principles of being relative to students and concreteness while preparing and applying their lesson plans.

Conclusion

In this current study, the researchers examined the teaching methods and techniques utilized by pre-service teachers during their practicum teaching lessons as part of their Teaching Practicum II course. Also investigated were how the pre-service teachers defined effective teaching, what they considered in the selection of their teaching methods, as well as the suitability of the chosen methods and techniques with previously established teaching principles.

When defining effective teaching, the pre-service teachers most often emphasized the choice of different methods and following a student-centered approach. However, some factors that the pre-service teachers rarely included but were important for choosing effective teaching methods included motivating students, developing creativity, respecting differing ideas, taking responsibility for learning, connecting learning experiences with daily life, ensuring that students recognized their own strengths and weaknesses, as well as ensuring that the students were inquisitive.

When the participants were queried regarding the roles of an effective teacher, the most frequently stated response was that the teacher needs to utilize differing teaching methods, techniques, and materials. The pre-service teachers also emphasized that for the effective roles of teachers, a teacher should be the guide, make the student effective, and give importance to individual differences. Less frequently, the pre-service teachers expressed that the roles of an effective teacher were preparing effective teaching plans, following technological developments, communicating effectively, and establishing empathy.

The pre-service teachers stated that in effective learning, students also have roles, such as actively participating in the lesson and taking responsibility for learning, thinking critically, and transferring what they learn to new situations. While pre-service teachers did not emphasize following technological developments and empathy when commenting on the roles of students, they also provided little consideration to research, willingness to learn, discovering information, working in a group, following classroom rules, and structuring knowledge. Additionally, it was determined that pre-service teachers mentioned most of the required roles of students for effective teaching and learning but did not express the role of students in effective teaching, such as the students’ being aware of their own learning process, producing problems or tasks to be studied, as well as evaluating themselves and/or their peers.

When pre-service teachers were asked to explain what they considered when choosing teaching methods, they stated that they considered the subject to be taught, the students’ readiness level, the number of students in the class, targeted gains, the teacher’s knowledge regarding the method, school infrastructure and available materials, time and cost, as well as gaining the students’ attention. It was seen that the pre-service teachers who participated in the study expressed all these recommended principles. In addition, the participants also emphasized that they considered whether the teaching methods they chose would grab the attention of their students.

Among the approaches, methods, and techniques the pre-service teachers had knowledge of were question-answering, drama, group work, educational games, lectures, the 5E learning model, six thinking hats, stations, brainstorming, demonstration, discussion, case study, taking circles, developing opinions, and role play. Among these teaching methods and techniques, the most frequently listed methods were question-answering and drama, while the least frequently listed methods were group work and educational play. When it came to the knowledge

of teaching methods and techniques, it was promising to see that pre-service teachers in this current study could list as well as use a variety of effective teaching methods and techniques.

Pre-service teachers were also asked to explain the motivation and reasons behind choosing the methods and techniques they used in their lesson plans. Pre-service teachers most often stated that the reasons behind their choices were to ensure effective teaching as well as to get the students to be more actively involved in the instruction. However, some other important reasons, such as motivating students, developing creativity, respecting different ideas, taking responsibility for learning, associating learning with daily life, ensuring that the student sees his strengths and weaknesses, and ensuring that the student is inquiring, investigating, and self-confident, were rarely mentioned for determining which teaching methods and techniques to use.

The results discussed so far have been obtained by examining the answers of pre-service teachers to the information form and the lesson plans they prepared. The results discussed in the following paragraphs were obtained by observing the pre-service teachers' lessons and field notes.

According to the results of the analysis of the videos from pre-service teachers practicum lessons that were recorded and reviewed and field notes taken by the researchers, it was recognized that the pre-service teachers in this current study utilized seven different teaching methods and techniques within a total of 18 lessons. From the most frequently used to the least frequently used, the methods and techniques utilized in teaching practicum lessons were question-answer, lecture and group work, individual work, station, drama, and fishbone diagram.

In this study, other than in mathematics instruction, it was observed in all the other subjects that pre-service teachers prepared and presented their lessons in accordance with these teaching principles: a) purposefulness, b) being relative to the student, c) keeping students active, and d) being concrete. One of the reasons for this finding may be that only a single observation was made of a mathematics lesson. Another reason could be that only two methods were chosen by the pre-service teacher for the mathematics lesson, and concrete examples and materials about decimal fractions that the students were unable to understand were utilized in the lesson.

Recommendations

Suggestions for both practitioners and researchers are given in the following paragraphs. Pre-service teachers should be generous in providing feedback to learners while they are teaching their lessons. For example, words that students do not know should be defined throughout the activities; instructions provided to students should be clear and repeated; when necessary, the time allotted for individual or group tasks should be explained; and when abstract concepts are part of the instruction, they should be supported with supplemental materials.

Courses should be taught with a student-centered approach using different methods and techniques, and teaching should be supported with visual elements. While theoretical lessons are dominant in teacher education programs, the proportion of lessons that provide the opportunity for practicum remains insufficient. Therefore, courses requiring practicum teaching should be included in teacher education programs from the first year of study.

In addition, as highlighted in the related literature, pre-service teachers should be supported in using the theoretical knowledge they have learned in their courses, such as (1) teaching principles and methods, (2) special teaching methods during the undergraduate education process, and (3) extending the period of teaching time within the scope of teaching practicum courses. Opportunities should be provided to pre-service teachers to apply the knowledge and skills they have learned during their undergraduate education. Furthermore, by extending the implementation period of the pre-service teaching practicum courses, the pre-service teachers can gain better knowledge, experience, and confidence in using the teaching methods and theories that will aid in improving their future students' learning and success. Another recommendation is that a similar study can be carried out with experienced teachers who have been teaching for 10 or more years. In doing so, the teaching methods and techniques preferred and utilized most by experienced teachers can be investigated.

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Author (s) Contribution Rate

Authors contributed equally.

Conflicts of Interest

There are not any potential conflicts of interest.

Ethical Approval

Since the study's data were collected before 2020, there was no Ethical Approval Form.

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