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A Case Study of Research Skills of Primary School Students

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Abstract: This study intended to examine and evaluate the opinions of classroom teachers about students' research skills at primary school. By using the case study method, one of the qualitative research designs, the research was conducted with a group of 20 classroom teachers who were determined through purposeful sampling. A semi-structured interview form was used as the data collection tool, and the data were analyzed using the content analysis method. According to the results of the study, classroom teachers defined the concept of research skills as a way to learn information, the effort to discover topics that awaken curiosity, and the process to recognize and solve a problem, as well as acting willingly, participating, questioning, and showing improvement. The teachers reported that the research skills of the primary school students were insufficient at the course levels and partially sufficient at the grade levels. Although the classroom teachers primarily used visual, technology-supported tools and inquiry-based strategies in research skills training, they believed that students' research skills were not fully developed. To develop research skills, the student should take part actively in the process. At the same time, the teacher should be a role model, bring interesting and entertaining activities to the classroom, and employ appropriate teaching methods and materials that will support research skills. As a result of the research, the teachers made the recommendations of increasing the technological facilities and resources of the school, encouraging students to conduct research according to their interests and abilities, supporting student autonomy, encouraging effective social participation, ensuring that the family environment and the teacher attitude is supportive to the child, conducting research on current issues, providing sufficient time for research, and assessing the behavioral aspects of research skills besides theoretical information at the end of the year.

Keywords: Primary school, classroom teacher, student, research skills, case study

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Introduction

In the curriculum of the life sciences and social studies courses, a special emphasis is placed on skills development, and it is aimed that these skills are transferred to life by the students. One such skill is the ability to research. Students are expected to have gained research skills to solve problems or succeed in a task. For this reason, skill training in primary school should be given particular importance and needs to be specially emphasized. At the primary school level, students' acquisition of basic life skills such as observation, questioning, problem-solving, and research skills will ensure that the individual leads a successful and contented life. To this end, in this study, research skills were addressed. The research skill is a functional capability for students in providing them with different perspectives, facilitating their learning, gaining problem-solving skills, supporting student autonomy, and helping them take an active role in the learning process.

When the definitions related to the concept of research in the literature are examined, many definitions can be encountered. Research is a process that involves observing, asking questions, guessing, collecting, recording, organizing, and explaining data, and presenting research results (Ministry of National Education [MEB], 2009). Research work is examination and investigation, and it is the methodical study carried out about science and art (Turkish Langauge Association [TDK], 2011). In this sense, research is an activity to arrive at a new conclusion by starting from a series of information (Ozcelik, 2001) or a planned and systematically conducted investigation directed to the purpose of understanding, explaining, developing any situation, and consequently producing scientific knowledge (Ekiz, 2003). Research is the active use of scientific process skills, such as identifying the problem and forming hypotheses, collecting and analyzing data, and discussing its results (McGregor, 2007). It is a process in which students are exposed to problems and explore scientific concepts (Hammer, 1997). When the definitions related to the concept of research are examined, it can be suggested that after the individual recognizes an existing problem, it is the name of the work of creating a plan using scientific methods to solve that problem, systematically examining the problem in the process, producing solutions, bringing it to a conclusion, and presenting the results by making a report.

Research should aim to solve problems by finding reliable solutions, and the information used should be scientific, recorded, and prepared in accordance with the rules of ethics. In research, attention should be paid to defining the problem, literature review, determining the method, implementation, and the reporting (Buyukozturk, Kilic Cakmak, Akgun, Karadeniz, & Demirel, 2020). In this context, the research process can be initiated by assigning tasks to students in various subjects and supporting their autonomy. In the research process, information can be researched by planning, the information obtained can be organized through analysis and synthesis, and new information and data that will create awareness can be put forth as a result (Willison & O'Regan, 2007). However, regardless of the amount of attention paid to the characteristics of the research and planning during the research process, some problems may still be encountered. While these problems can sometimes be rooted in

the research itself, sometimes they may be caused by the researcher. Therefore, the person conducting research should gain research skills.

A *skill* can be defined as a complex action that requires knowledge and involves performance, and it is the ability to be developed and transferred to life (MEB, 2005). It is also the state of being capable, mastery, dexterity, aptitude to do or fulfill a task, and the talent to accomplish an operation in accordance with its purpose (TDK, 2011). Skill is also defined as the individual's ability to perform motor and cognitive behavior appropriate to changing conditions (Sever, 2021) and to fulfill certain roles and duties that are expected from the individual by society (Mcfall, 1982). These definitions suggest a holistic side to the concept of skill. The fact that the individual is cognitively, affectively, kinesthetically, and socially competent and that he/she succeeds in a task within the framework of these competencies and transforms it into behavior can be called "skill." In this sense, it can also be expressed as the behaviors expected from the individual after a certain accumulation of knowledge and emotional maturity of the individual.

According to the life sciences course curriculum, research skills are expected to be gained by the students. In addition to research skills, the curriculum aims to provide students with 23 different basic life skills, such as problem-solving, self-management, communication, observation, cooperation, entrepreneurship, decision-making, social participation, compliance with rules, time management, and using information and technologies (MEB, 2018). Hence, students are expected to have gained research skills to be able to solve the problems they encounter in their in-school and out-of-school life or to accomplish a task. In addition, an individual with research skills needs to bring a problem from life to the classroom, plan all research processes gradually, and manage the process (Kennedy, Latham, & Jacinto, 2016).

In order to develop research skills, students' curiosity and decisions should be supported. In this respect, flexibility should be given to students' cooperative and participatory learning processes in learning environments, and constructive, creative thoughts and higher cognitive skills should be developed (Willison, 2018). For individuals to develop research skills, they also need to have improved their reading, using evidence, problem-solving, decision-making, and critical thinking skills. Consequently, the research process refers to an intensive procedure in which other skills are engaged in addition to the research skill. This state allows the individual to strengthen other skills while using the research skill (Akhan & Demirezen, 2015; Caliskan, 2017; Demircioglu, 2003).

The research skill, an essential skill that every individual should own, is included under the title of ‘skills’ in all life sciences course curricula prepared in 2009, 2015, and 2018 (MEB, 2009, 2015; 2018; Tay & Bas, 2016). However, when the Life Sciences Course Curricula (Grades 1, 2, and 3) are examined in detail, it is seen that very few learning outcomes concerning the research skill are included. A close investigation of the research skills included in these learning outcomes reveals that these skills are aimed at students’ researching and obtaining knowledge in general. Nevertheless, to research

and obtain knowledge, the student must first learn how research is conducted, its requirements, and the research methods. It is certain that to provide students with research skills in life sciences lessons, some prerequisite skills such as entrepreneurship, communication, using information and technologies, observation, problem-solving, decision-making, critical thinking, time management, perceiving change and continuity, innovative thinking, reading comprehension, and interpretation are needed. In this context, in providing research skills to students in primary school, it should not be forgotten that their level of social and emotional readiness is also important in addition to students' own knowledge, skills, and attitudes.

When children start primary school, they first meet the classroom teacher and take the teacher's behavior as a model. Thus, the classroom teacher has critical importance and influence on the life of the child who has just started school. Along with the student-centered constructivist approach, the roles of the teacher have changed in the new system that is based on research and inquiry. The teacher should be open-minded and consider students' individual differences; he/she should not be the presenter of readymade knowledge but be a learner with the student (Selley, 1999). In the new system, the teacher makes students think by asking questions and encourages them to solve and investigate the problem without explicitly saying how to think or solve it but helping and guiding the student to find it (Brooks & Brooks, 1999). Teachers and students should prepare an appropriate learning environment, and a communication environment should be provided where students will be active and develop problem-solving, research, and independent thinking skills (Sasan, 2002).

The classroom teacher should nurture an appropriate learning environment for the students to conduct research and to generate thoughts in solving the social problems they experience in their immediate environment. Taking advantage of each student's interests and abilities, they should encourage the development of their students' problem-solving, communication, research, and investigation skills. As a result, the classroom teacher needs to create a learning environment suitable for the constructivist understanding of education, placing the research skill into the center. Primary school should be the most important educational step where many skills, including research skills, which will form the basis and influence the student's later years, are acquired from the very beginning. Primary education needs to attach importance to skills training, skills should be emphasized with special attention, and they should become used in life by being transformed into behavior. Thus, classroom teachers should give importance to teaching strategies, especially through invention, research and examination, and actively use them in lessons to train students with research skills.

Previous studies conducted on students' research skills are available in the literature (Alkan Dilbaz, 2013; Chu, 2008; Erdogan, 2018; Gunes, 2011; Ilter, 2013; Kanatli Ozturk, 2018; Larkin & Pines, 2005; Polat Demir, 2016; Waite & Davis, 2006; Willison, 2012; Willison & Buisman-Pijlman, 2016; Yildirim, 2007). Some studies are conducted with parents on students' research skills (Ozer, 2014) and the effect of science courses and curricula on students' research skills (Turan, 2019). Even though many studies have also been carried out with teachers (Buyukozturk, 1999; Yildiz, Kilic, Gulmez, & Yavuz, 2019; Kursun, 2013; Senbasaran Uguz, 2013; Willison, 2012; Willison &

Buisman-Pijlman, 2016; Yasan, 2011; Yildiz, et al., 2019), it was determined that a detailed study on research skills was not carried out in primary education.

This study aimed to explore research skills at the primary school level. Within the scope of the research, answers to some questions related to the concept of research skills, their importance and place in the primary school program at the level of courses and grades, efforts to improve the research skills of the students, and the tools, methods, and techniques used were sought. In addition, questions such as what kind of obstacles the classroom teachers faced while helping students gain research skills, the research skill mastery levels of the students, and the solution proposals for problems regarding research skills were addressed in detail. This research may be valuable in creating a source for the relevant literature, shedding light on the prospective studies to be carried out in this field, and encouraging alternative studies.

Method

Research Design

The case study method, a form of qualitative research designs, was utilized in this study. According to Denzin and Lincoln (1998), qualitative research is the researcher's attempt to examine the subject under investigation in its natural environment and to interpret and make sense of the subject (as cited in Ekiz, 2003). In qualitative research, there is an effort to construct the study with a particular method and to examine and comprehend the subject in depth. The researcher attaches importance to the subjective point of view of the individuals participating in the research (Karatas, 2015). In other words, qualitative research deals with the feelings, thoughts, perceptions, and experiences of the individual (Gurbuz & Sahin, 2018).

In this research, the investigation of ‘research skills in primary school’ is designed with the case study method from qualitative research designs. When the literature related to case study is examined, it is seen that various names such as case study, are used for this method (Ersoy, 2006; Yin, 2003). Since the classroom teachers who made up the participant group of the study were likely to have knowledge and experience about the conditions in the school, it was aimed to reveal these experiences by interviewing. A case study deeply examines, analyzes, and defines one or more situations, environments, or a system that is limited to the researcher’s purpose (Creswell, 2007; Stake, 1995). In an effort to understand a complex situation, it provides the opportunity to collect rich data with the questions of ‘why’ and ‘how’ and to evaluate it holistically; it also allows a situation that exists in life to be investigated and examined in its environment (Akar, 2016; Yin, 2003). As a result, a case study does not aim to generalize based on the data obtained about that situation (Lichtman, 2006), and it is instead a method that explains what is understood from the situation (Denzin & Lincoln, 1994).

Participant Group

The participant group of the study was determined by means of the purposeful sampling method. The essence in purposeful sampling is to determine the situations with information-rich content that is desired to be obtained according to the purpose of the research and to examine them in depth. Purposeful sampling is preferred in cases with specific characteristics or that meet certain criteria (Buyukozturk et al., 2020). In this study, criterion sampling was used from the purposeful sampling types. Criterion sampling entails the study of situations that meet the pre-determined criteria or those established by the researcher (Yildirim & Simsek, 2018). In this regard, the criteria taken as basis in the selection of the sample for this study were that the participants were easily accessible, they volunteered to participate, they were working in primary schools, and that teachers from all grade levels in the primary school were represented.

The participant group of this research consisted of classroom teachers working in a primary school in the center of Nevsehir in the 2021-2022 academic year. Of the 21 classroom teachers at the school, 20 volunteered to participate in the study and agreed to be interviewed. Hence, the study group consists of 20 classroom teachers. The demographic information of the participant group is presented in Table 1.

Table 1.

Demographics of the Participant Group

Classroom Teachers		***n***	**%**
Gender	Female	11	55
	Male	9	45
Professional seniority	0-10 years	1	5
	11-20 years	12	60
	21 years and above	7	35
Grade taught	Grade 1	6	30
	Grade 2	5	25
	Grade 3	4	20
	Grade 4	5	25

When the demographic characteristics of the study group was examined, it was seen that the number of female teachers was slightly higher than that of male teachers. Regarding their professional seniority, the number of teachers working between 11-20 years was the highest. The distribution of classroom teachers across grades was nearly similar considering the grade levels taught.

Data Collection Tool and Procedure

In this study, an interview form consisting of 10 open-ended questions was used as the data collection tool. The questions were prepared by considering the features of semi-structured interview forms. In the semi-structured interview technique, additional probe questions can be asked to get detailed information on the subject along with the pre-prepared questions, and it is generally preferred because of its standard and flexible

nature and the ability to get in-depth information (Turnuklu, 2000; Yildirim & Simsek, 2018). While preparing the questions in the interview form, the literature was reviewed, and the opinions of three academic experts in the primary education department were taken for content validity and reliability. A classroom teacher working in a field other than the participants was consulted to evaluate the clarity and comprehensibility of the questions, and the questions in the interview form were finalized accordingly. The questions in the interview form that was used as the data collection tool were sent to the ethics committee, and the necessary permissions were obtained. The interview questions used in the research are given below:

1. What does 'research skill' mean to you?

2. What is the importance of research skills?

3. What is the place of research skills at the level of courses in the primary school program?

4. What is the place of research skills at the grade level in the primary school program?

5. How do you improve students' research skills? What types of activities do you implement?

6. What tools and materials do you use to develop students' research skills?

7. What strategies, methods, or techniques do you use to develop students' research skills?

8. What do you think are the obstacles in the process of acquiring research skills?

9. What is your judgment about students' level of research skills? Can you make an evaluation?

10. What are your suggestions for the development of students' research skills?

Data Collection and Analysis

While collecting the data, an appointment was made with each teacher according to the hours they were available, and they were assisted in examining the questions in the interview form before the interview and in responding to the questions when they needed help (Buyukozturk, 2012). The ethics permission of the Scientific Research and Publication Ethics Committee of the university (meeting decision number 2021.09.351) was also shared with the participants. During the interviews, necessary explanations were made about the questions, and the voluntary interviews carried out lasted an average of 30-35 minutes. In addition, the participants were enabled to check their answers to the questions at the end of the interview. Ensuring that the participants check their answers at the end of the interview is one of the practices to contribute to the credibility of the research data (Yildirim & Simsek, 2018). It is also important to include direct quotations from the statements of the participants to increase the credibility of the study (Cepni, 2018).

The data collected from the classroom teachers were analyzed following the steps of content analysis. First, in light of the interview questions, all forms were read, and a framework was created. Second, codings were made under specific themes on the data obtained from the readings, and sub-themes were included under the themes based on the opinions of the participants (Creswell, 2007; Creswell, 2013; Yildirim & Simsek, 2018). Considering the answers given by the teachers to the questions, the words they used were written by coding them separately and divided into certain groups to create the themes and sub-themes, and then they were matched. The encodings and matchings were made by the researchers and field experts. Afterward, the coders came together and agreed on the inharmonious codings, and the final themes and sub-themes were created (Anagun, Yalcinoglu, & Ersoy, 2012; Ersoy, 2014). Each interview form was coded using T1, T2, …, and T20 to protect the privacy rights of the classroom teachers, and the data were supported by directly quoting the opinions of the teachers to increase the validity of the research.

Credibility and Ethics

The concepts of validity and reliability used in quantitative research methods have been replaced by the concepts of credibility and consistency in qualitative research (Lincoln & Guba, 1985). In this study, the requirements of the concepts of credibility and consistency were fulfilled. For credibility, the number and characteristics of the participants, how they were selected, the data collection tool, and the processes of collecting and analyzing the data should be explained in detail (Creswell & Miller, 2000). It is also recommended to obtain participant confirmation, include direct participant statements, involve interaction, ensure detailed and diverse data collection, and seek expert opinion for credibility (Lincoln & Guba, 1985; Merriam, 2009; Patton, 2014). Consistency, on the other hand, determines the quality of the research and is used instead of reliability in quantitative research (Yildirim & Simsek, 2018). In this sense, every process performed from the beginning to end in this study was explained in detail. For consistency between coders, the data was shared with three experts working in the field, and their help was obtained in the analysis of the data. The errors detected after the feedback were corrected. To ensure internal validity and reliability, the answers obtained from the participants were coded by experts working in the field of classroom education. Miles and Huberman's (1994) formula was used to determine the level of intercoder agreement, and the intercoder fit was calculated as .85. Since this ratio is expected to be at least .70 (Miles & Huberman, 1994), it can be said that the coders' compatibility ratio achieved was satisfactory for the study.

Since classroom teachers are thought to be familiar about the research skills of primary school students, they make up the study group in this research. Accordingly, the treatment and examination of the research topic in its natural environment contributed to the presentation of the subject with rich content. The data collection was carried out with the teachers on a voluntary basis, and the interviews with each participant were completed face-to-face in a period of approximately 30-35 minutes. The collected data were analyzed through content analysis. Then they were tabulated to summarize, and they were explained, interpreted, and evaluated.

Findings

Findings of the First Sub-Problem

The opinions of the class teachers on the question of, 'What does 'research skill' mean to you?' are presented in Table 2.

Table 2.

Classroom Teachers' Views on the Concept of Research Skills

Themes ve Subthemes	
I.Discovering information -A way of learning information -An effort to discover individually	**II.Learning by curiosity** -Topics of interest - Persistent and deep learning
III. Solving problems by questioning -The path to success -Recognizing and solving the problem -Correct and meaningful questions	**IV.Ensuring participation** -Taking action -Being eager -Being useful
V.Being in development -Striving for personal development -Contributing to the development of society	

As demonstrated in Table 2, the opinions of the classroom teachers on the concept of research skills were grouped under the themes of discovering information, learning by curiosity, solving problems by questioning, participation, and being in development, along with the sub-themes mentioned in the table. In the answers given to the research question, some direct statements of the teachers are given below:

T1. "It helps us learn a skill by asking questions."

T5. "It is to explore, to learn on your own, to be able to find the problem."

T10. "It refers to the self-development of the person through his/her own effort."

T11. "It is recognizing, comprehending, planning, and testing the problem by asking correct and meaningful questions."

T16. "Willingly participating in an action."

Findings of the Second Sub-Problem

The opinions of the class teachers on the question of, 'What is the importance of research skills?' are demonstrated in Table 3.

Table 3.

Classroom Teachers' Views on the Importance of Research Skills

Themes and Sub-Themes	
I.Learning -Facilitating learning -Increasing the desire to learn -Ensuring retention in learning	**II.Problem-solving** -Finding solutions to problems -Making inquiries -Having a broad perspective
III.Making plans for personal development -Self-improvement in many ways -Researching information accurately, planned, and purposefully -Doing work accurately, planned, and purposefully	**IV.Providing a different perspective for innovations** -Creating a different perspective -Adapting to new conditions -Being open to innovation -Thinking flexibly

As presented in Table 3, when the opinions of the classroom teachers on the importance of research skills were examined, it was determined that the themes of learning, problem-solving, planning for personal development, and offering different perspectives for innovations and the relevant sub-themes emerged in the data. Some sample statements in the answers given to the research question are given below:

T1. "They allow us to understand, interpret, and evaluate information."

T2. "Creating different perspectives on a problem through a path or paths."

T5. "To keep up with the changing and developing world conditions."

T12. "They are important for learning, identifying what they want to learn, and preparing them to learn."

T17. "They enable to identify the subject or information to be researched accurately, and carry out the study in a planned way under its purpose."

Findings of the Third Sub-Problem

The third question was, 'What is the place of research skills at the level of courses in the primary school program?' The views of the class teachers about the question are summarized in Table 4.

Table 4.

Classroom Teachers' Views on the Place of Research Skills at the Course Level in the Primary School Program

Themes and Sub-Themes	
I.Insufficient -More time should be allocated for research skills.	**II.Partly sufficient** -It is included in some courses.
III.Sufficient -Adequate time is allocated for research skills.	

As seen in Table 4, when the opinions of the classroom teachers regarding the place of research skills in the primary school program at the level of the courses were examined, it was seen that the majority of them were gathered under the 'insufficient' theme. The teachers stated that research skills should be given more coverage. Under the theme 'partially sufficient,' some teachers reported that research skills were addressed in some lessons, while the opinions of other teachers were relevant to the 'sufficient' theme. Sample quotations in the answers given to this research question are as follows:

T1. "They are important in some subjects in primary school. For example, they have an important place in life sciences and science lessons."

T4. "There are very few subjects that require research skills in Grade 2 and Grade 3. They can be increased more often for the active participation of the student."

T7. "They are important and should be given more coverage. They should be supported not only by in-school but also by out-of-school activities."

T15. "They are not included at Grade 1 level at primary school."

T14. "Considering that we are in the age of communication, more research topics should be included in the curriculum. They are not adequately reflected in the learning outcomes."

T19. "I do not think they are enough."

Findings on the Fourth Sub-Problem

The fourth sub-problem of the study was expressed as, 'What is the place of research skills at the grade level in the primary school program?' The answers of the class teachers are grouped under the themes presented in Table 5.

Table 5.

Classroom Teachers' Views on the Place of Research Skills at the Grade Level in the Primary School Program

Themes and Sub-Themes	
I.Upper grades -As the grade level rises, studies about research skills are also increasing.	**II.All grades** - Research skills are available at all levels.
III.Highest grades - More coverage is allocated in the final grade.	**IV.Lower grades** -There is less coverage of research skills in Grade 1 and Grade 2.

Regarding the place of research skills at the grade level in the primary school program, the majority of the classroom teachers stated that the studies on research skills increased as the grade level increased (Table 5). While half of the participants stated that research skills were present at all grade levels, a small number of the teachers stated that they were given more coverage in the last grade and took less place in the 1st and 2nd grades. Sample direct quotations from the answers given to the research question by the teachers are given below:

T10. "Research skills develop a little more in Grade 4 in primary school. They are more in Grade 4 compared to other grades."

T12. "While they take place with questions in the 1st grade, they are carried out with research assignments from the 2nd grade and onwards."

T16. "The participation of each grade with activities appropriate to their level will contribute to permanent learning."

T19. "They should be included at every grade level."

T20. "As the grade level increases, the studies for research skills are also increasingly covered."

Findings of the Fifth Sub-Problem

The opinions of the class teachers on the questions of, 'How do you improve students' research skills? What types of activities do you implement?' are presented in Table 6.

Table 6.

Classroom Teachers' Views on the Activities and the Paths They Follow to Improve Students' Research Skills

Themes and Sub-Themes	
I.Teacher-guided activity preparation -Ensuring students' active participation in the process -Doing activities with the students about the research topics -Engaging in entertaining research by including topics that are attractive, interesting, and instigate students' curiosity	**II.Knowledge and use of strategies, methods, and techniques** -Knowing the teaching approaches to the research topic -Using appropriate methods and techniques for teaching the subject
III.The teacher as a role model -Providing accurate guidance -Being a role model with behaviours -Consistency in teacher's rhetoric and actions	**IV.Use of materials and resources** -Being able to use the resources, tools, and materials related to the research subject purposefully -Utilizing resources and materials that will attract students' interest and curiosity about the research topic

The classroom teachers' opinions on the question of how to develop students' research skills are presented in Table 6. The themes were determined as preparing activities under the teacher' guidance, knowing and using strategies, methods and techniques, taking the teacher as a role model, and using resources and materials along with the sub-themes as specified in the table. From the answers to the research question, the selected direct statements of some teachers are given below:

T4. "They may be asked to research and portray a famous person, a hero of the war of independence, or a scientist."

T5. "I try to create spaces for students to experience and explore on their own. I give them a problem and ask them to produce solutions through group work."

T12. "Films on the subject can be shown, trips to museums, etc., can be arranged, and the results of the research can be noted and recorded."

T16. "Tools and equipment used in some lessons, etc., can be made together with the students, games can be played together, puzzles can be prepared."

T19. "An encouraging, entertaining game and reward system can be provided with games that aim to investigate and learn and with interesting questions that stir curiosity."

Findings of the Sixth Sub-Problem

'What kind of tools and materials do you use to develop research skills?' was the sixth interview question directed to the class teachers. The opinions of the participants on the question are presented with the themes in Table 7.

Table 7.

Classroom Teachers' Opinions on What Tools and Materials They Used to Improve Research Skills

Themes and Sub-Themes	
I.Visual aids -Books, magazines, newspapers, pictures, models, maps, posters, projector	**II.Technology-enabled tools** -Computer, tablet, smart board
III.Internet and social networking tools -The internet, web pages	**IV.Audio-visual tools** -Films, videos, television, educational trips, puppets
V.Auditory tools -Audio recordings, CDs	

As shown in Table 7, when the opinions of the classroom teachers on the question of what kind of tools and materials they used for the development of research skills were examined, it was seen that they touched on the themes of visual tools, technology-supported tools, internet and social network tools, audio-visual tools, and auditory tools. Some sample answers from the teachers are presented as direct statements below:

T1. "In science classes, I use tools for experiments, books, magazines, the computer, and the projector."

T4. "The computer, costumes, laboratory supplies, maps, posters, visual and print materials, puppets, newspapers, books."

T7. "Technological resources, audio-visual resources, out-of-class environments."

T10. "In addition to the internet, books, etc., we also use some people to develop research skills."

T13. "Resource books, the internet, family-related photos, albums, videos, etc."

T15. "The smart board, projector, computer, and the internet are the most powerful tools."

Findings of the Seventh Sub-Problem

The answers of the class teachers to the question of, 'What strategies, methods, or techniques do you use to help students gain research skills?' are summarized in Table 8.

Table 8.

Classroom Teachers' Opinions on Which Strategies, Methods, or Techniques They Used to Help Students Gain Research Skills

Themes and Sub-Themes	
I.Inquiry-based strategies - Discussion, brainstorming, debate, problem-solving, project, case study, experiment, observation trip	**II.Dramatization-based strategies** - Drama, theatre, demonstration, role playing, puppet show
III.Collaborative teaching strategies -Group projects, six hats, station, mutual inquiry	**IV. Narrative-based strategies** -Plain narration, question-answer, story, fairy tale, storytelling

In the responses of the classroom teachers regarding the question of which strategies, methods, or techniques they used to help students gain research skills, the themes of inquiry-based strategies, dramatization-based strategies, cooperative teaching strategies, and narrative-based strategies were identified, and these were presented with their sub-themes in Table 8. Sample statements of some teachers to this research question are as follows:

T6. "First of all, research work that is relevant to the subject and attracts the attention of the student can be given. It can be presented in class or presented in the form of a demonstration."

T7. "Problem-solving, resource review, case study, station, six hats, drama, brainstorming, discussion."

T13. "Teaching strategy through researching and investigation, brainstorming, asking questions, discussion, projects, observation trips, experiments."

T16 "Animations, games, etc., in which children will express themselves in a comfortable way."

T20. "I use brainstorming, discussion, drama, station, and six hats techniques."

Findings of the Eighth Sub-Problem

The eighth interview question was, 'What do you think are the obstacles in the process of acquiring research skills?' The views of the class teachers about this question are grouped under the themes presented in Table 9.

Table 9.

Classroom Teachers' Opinions on the Obstacles in the Process of Acquiring Research Skills

Themes and Sub-Themes	
I.Technological obstacles -Lack of facilities, technology, internet, and resources	**II. Student-induced obstacles** -Students' attitudes -Personality traits of students
III.Family-induced obstacles -Family environment and its environmental characteristics -Structure and characteristics of the family	**IV.Teacher-induced obstacles** -Teacher's attitude -Personality traits of the teacher
V. Time-related obstacles -Limited time	**VI.Curriculum-related obstacles** -Subject overload

The classroom teachers' responses regarding the obstacles in the process of acquiring research skills were grouped under the themes of technological obstacles, student-induced obstacles, family-induced obstacles, teacher-induced obstacles, time-related obstacles, and obstacles arising from the curriculum (Table 9). Direct statement samples of some teachers regarding the obstacles are given below:

T4. "Lack of library culture of students, loss of curiosity, laziness, and rote learning."

T7. "Lack of technology, internet, and resources. Children's lack of knowledge about how to even investigate, reluctance in student motivation and interest."

T12. "Students' not making efforts to identify and fix problems."

T16. "There are obstacles such as the child's family structure, the environment in which the child is raised, the child's own characteristics, the economic status of the family, the excess of subjects in the curriculum, and the limited time."

T17. "One of the factors that will hinder research skills is teacher's attitude and behavior (in the negative sense). If the teacher is not constructive and motivating, this creates an obstacle in this process."

Findings of the Ninth Sub-Problem

The opinions of the class teachers on the question of, 'What is your judgment about students' level of research skills? Can you make an evaluation?' are demonstrated in Table 10.

Table 10.

Classroom Teachers' Views on Students' Research Skills

Themes and Sub-Themes	
I.Insufficient - They cannot do the work. Their parents do. They are accustomed to the readymade. Their work is very incomplete and inadequate.	**II.Partly sufficient** -They need support. They do it with difficulty. They need guidance.
III.Sufficient -Their skills are at a sufficient level. They know what sources to use and how to use them.	

As shown in Table 10, the opinions of the classroom teachers regarding their evaluations of the students' research skills revealed that the majority considered these skills insufficient. Some teachers regarded students' research skills as partially sufficient, while very few teachers considered these skills sufficient. Below are some sample statements by the teachers:

T3. "Students are accustomed to the readymade in our time. No research skills, and almost no reading books. Their technological knowledge is too much, but they are trying to acquire knowledge without effort."

T6. "In general, younger grades are hardly able to do the research without a parent. The parent of the child does it."

T7. "I find them adequate. When I give my students the problem of the research topic, they know where and how to benefit from."

T10. "Sometimes support and help is needed. They have a hard time doing research on their own."

T11. "The opportunities and facilities of the students in the city center have a positive impact. The countryside is negative in this respect."

Findings of the Tenth Sub-Problem

'What are your suggestions for the development of students' research skills?' was the last interview question. The opinions of the classroom teachers on this question are summarized in Table 11.

Table 11.

Suggestions of Classroom Teachers for the Development of Students' Research Skills

Themes and Sub-Themes	
I.Being suited to students' talents and interests -Engaging curiosity and interest -Being suited to students' aptitude -Being suited to students' level	**II.Ensuring social engagement** -Active participation in the lessons -Encouraging social engagement -Increasing self-confidence
III.Reading -Doing much reading -Reading from a variety of sources -Going to the library -Reading and taking notes	**IV.Increasing research assignments** -Thinking about current issues -Doing research frequently -Assigning performance tasks -Assigning project work
V.Doing activities -Increasing the number of activities in books -Doing activities based on students' interests	**VI. Providing opportunities and environments related to the use of technology** - The use of resources should be ensured by expanding the use of technology. -Social environments should be made available by increasing opportunities.

In Table 11, the themes of being appropriate for students' abilities and interests, ensuring social participation, reading, increasing research assignments, doing activities, and providing opportunities and environments related to the use of technology were determined in the opinions of the classroom teachers regarding their suggestions for the development of students' research skills. The direct quotations of some teachers are provided below:

T7. "If research topics appropriate to the interests, talents, and abilities of the children are given, we will be pleased with the results."

T10. "Programs can be prepared with the ability to use technology correctly, library visits, active participation of the student in the course, and by establishing a social environment with their friends."

T14 "Education should be given according to the skills of children. These should be identified at primary school and developed in line with their abilities at other levels."

T17 "Instead of giving readymade information to children in lessons, we should leave the subject halfway at the most crucial point and develop a sense of curiosity in it, and then lead them to research."

Results and Discussion

The purpose of the present paper was to examine and evaluate the opinions of classroom teachers about student's research skills at the primary level. The results of the research are discussed following the sub-problems.

Classroom teachers *defined research skills* as a way to learn knowledge, topics that create curiosity, individual exploration effort, permanent and deep learning, the path to success, recognizing and solving the problem, correct and meaningful questioning, willingness to act, participating, willingness, taking action, being useful, showing development, striving for personal development, and contributing to the development of society. The teachers explained *the importance of research skills* as facilitating learning, finding solutions to problems, developing oneself in multiple ways, increasing the desire to learn, making inquiries, creating a different perspective, having a wide perspective, being open to innovations, thinking flexibly, researching information correctly, planned, and in accordance with its purpose, ensuring permanence in learning, doing accurate, planned, and purposeful work, and adapting to new conditions. Similar research results were found in the study by Kursun (2013), who stated that the students who gain research skills are conscious, curious, active, and willing. In developing students' research skills, it is important for teachers to provide opportunities for them to discover what is happening in their immediate environment, to collaborate with students in raising their awareness about problems, to ask questions about the process, to invite them to make explanations and presentations, and to counsel and guide students (Bee & Boyd, 2002; Vygotsky, 1987).

The majority of the classroom teachers stated that the *place of research skills in the primary school program at the level of courses* was mostly insufficient, it should be included in all courses, and research skills were included in some subjects, especially life sciences and science courses. Most teachers stated that as the grade level increased, research-based work also increased, but it was still available at all grade levels to some extent. A few teachers stated that research skills were given less coverage in Grades 1 and 2, while these skills were utilized more often in the final grade. In addition, classroom teachers believed that there were very few learning outcomes in the lessons that involved research skills, and research skills should become more challenging and elaborate in a way that would improve the students as the grade level increased.

Concerning the *development of research skills*, teachers attached importance to students' being active in the research process, preparing and carrying out activities with the student, conducting entertaining research by including topics of interest and curiosity, using the strategies, methods, and techniques as well as resource materials and tools for the research subject knowingly, being a guide as the right role model, being an example with their behaviors, and behaving consistently with what they say. Classroom teachers stated that they generally selected interesting topics that students could research on their own and gave them research assignments. Furthermore, they think that sharing the fun activities that students will prepare under the guidance of the teacher in the learning environment will be effective in the development of research skills. Yildirim (2007) states that the project-based teaching method is effective in acquiring research skills, and directing students to educational environments and experiences is also important in the development of research skills. During the research

process, it is important for the teacher to fuel extrinsic and intrinsic motivation besides providing the right guidance. Complex and multiple pieces must be joined together, and the meaningful whole must be attained (Waite & Davis, 2006).

Classroom teachers mostly use visual tools (books, magazines, newspapers, pictures, models, maps, posters, projectors) and technology-supported tools (computers, tablets, smart boards) to *help students gain research skills*. Next, they use the internet social networking tools (the internet, web pages), audiovisual tools (films, videos, television, educational trips, puppets), and auditory tools (audio recordings, CDs), respectively. While examining 21st century teacher skills, Kennedy, Latham, and Jacinto (2016) suggest that teachers regularly update their technology, course tools, and materials, develop themselves by conducting research on course applications, improve course teaching materials and methods, and be original, creative, and critical.

The examination of the data on the *strategies, methods, and techniques that can be applied to help students gain research skills* revealed that classroom teachers mainly used strategies based on inquiry (discussions, brainstorming, debates, problem-solving, projects, experiments, case studies, and observation trips). Additionally, they used strategies based on dramatization (drama, shows, theater, role-playing, puppet shows), cooperative teaching strategies (group projects, station, six hats, mutual inquiry), and narrative-based strategies (plain narration, question and answer, stories, tales, and storytelling). In developing research skills, Willison (2018) draws attention to the creation of the research methods content and determining the research processes by supporting student autonomy, ensuring the motivation of the students, and encouraging their participation in the whole educational process. Likewise, Wu and Hsieh (2006) designed a series of inquiry-based learning activities to improve students' research and inquiry skills and stated that these were substantially effective. On the other hand, Digenti (1999) pointed out the advantages of collaborative learning in the educational environment.

When the data on *the obstacles in the process of acquiring research skills* were examined, classroom teachers stated that there were barriers related to technology, students, families, the teacher, time, and curriculum. Underlining that gaining research skills is a long and challenging process, classroom teachers emphasized that in addition to the obstacles caused by time, the subject load in the curriculum is also intense. In addition to the reasons arising from the student's own attitudes and personality characteristics, negativities in some teacher attitudes and characteristics may also constitute obstacles to research skills. According to the teachers, the family circle and environment, as well as the inadequacy of family structure and characteristics, the lack of technology, internet, resources, and facilities at school can also create barriers to developing research skills. To overcome these obstacles, Erten (2019) mentioned the importance of reading extensively, being sensitive, curiosity and researching, asking questions with confidence, being open to innovations, and being patient to solve problems with communication in order to provide teacher candidates with learning and renewal skills. Chu (2008) suggested that teachers receive general education related to research, support students' researching and investigation skills and inquiry-based education, and become facilitators and guiding role models.

Most of the classroom teachers stated that *students' research skills* were "inadequate." They expressed the opinion that more work should be done to improve the research skills of the students. They also reported that students could not do their research assignments on their own, most of these were done by their parents, the students were accustomed to the readymade work, they had many deficiencies, and they were not competent enough. In addition, teachers who said that their students were "partially" competent in research skills stated that students needed support, were struggling, and could do research if guided. Very few teachers who said that students' research skills were "adequate" maintained that the students knew how and what kind of resources to use in their research assignments and were at a sufficient level.

The classroom teachers have offered many *suggestions for the development of students' research skills* in primary school. These include providing education to students according to their interests and abilities, conducting sample research that will attract their interests and arouse their curiosity, increasing students' self-confidence by encouraging active class participation and social participation, reading extensively and going to the library, doing activities, increasing the number of activities in books, doing activities according to their interests, increasing research assignments, thinking about and researching current issues and problems, assigning performance tasks, giving project assignments, increasing technological facilities and resources in schools, and providing necessary social environments in schools. They also suggested that students' readiness levels should be considered, sufficient time should be provided for research, and their interests and motivations should be increased. In line with the results of the present research, Yildirim (2007) reported the classroom teachers' observation that students experienced problems in the application of research skills due to their inexperience or financial hardships. In addition, Buyukozturk (1999) states that teachers' research skills are not at a sufficient level and that they cannot deliver this skill to students.

Difficulties and adversities arising from the family, school, and environment are also experienced in the process of gaining research skills (Kursun, 2013). In this sense, it becomes important to support the research methods course taken at university with applied research projects and to employ online out-of-school learning environments such as libraries in the development of research skills (Larkin & Pines, 2005). Besides, encouraging students to conduct research as well as supporting and motivating collaborative group work facilitates learning and improves research skills (Waite & Davis, 2006).

Suggestions

Based on the results of the research, the following suggestions can be made:

1. It is recommended that research skills be given more coverage in the learning outcomes of the curricula at the course level.

2. Instead of a system in which only the knowledge levels of the students are measured and evaluated in the courses, it is recommended to implement a system in which the skill behaviors are also assessed.
3. For students to develop their research skills, it is recommended that schools increase their facilities and resources, especially those related to technology and the internet.
4. Since research skills involve a process that requires time and effort, time flexibility needs to be ensured in the syllabus and curriculum.
5. The problems arising from financial opportunities, readiness levels, and lack of prior knowledge, which affect some students' research skills, need to be eliminated. It is recommended that students in this situation are provided with the necessary conditions and facilities.
6. In general, studies on the research skills competence of teachers and students should be increased.
7. More comprehensive studies can be carried out comparatively, in which the feelings, thoughts, and attitudes of teachers and students regarding research skills are evaluated.
8. The research skills competencies of the teachers in the field and those of the teacher candidates studying in the Faculties of Education might be studied comparatively.
9. Seminars, courses, and programs about research skills can be organized regularly according to the levels of the students in the school.
10. The learning-teaching environment should be appropriate for students to develop their research skills at school. It is recommended to establish a flexible, participatory, inquisitive, and supportive approach that encourages student autonomy. Critical and innovative thinking, collaborative work, democratic social participation, free questioning and discussion, and evidence-based solving of problems through scientific processes should be reinforced.

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