Meta-Thematic Analysis Of Research On Forest School-Based Practices: A Comprehensive Review

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Abstract

Originally developed in Scandinavia, forest schooling encourages children to study by removing them from the confines of their homes and schools and allowing them to engage in outdoor endeavors. The aim of this study is to analyze the results of qualitative research on forest school-based practices in early childhood education with the meta-thematic analysis method and to see the effects of forest school-based practices on child development as a whole by combining the results. For this purpose, meta-thematic analysis of qualitative studies was conducted by subjecting them to content analysis with the document analysis pattern. The meta-thematic study identified children's cognitive, social, and emotional development as the primary foundations. A total of 725 research studies were initially identified, and their selection process was illustrated using a flow diagram. Out of these, 12 studies—sourced from national and international databases—were selected for detailed analysis. The results of the analysis showed that forest school-based practices have positive effects on children's cognitive, social-emotional, motor and language development areas. Nonetheless, these applications exhibit some adverse characteristics such as cold weather, insufficient planning, lack of knowledge etc. yet, alternatives exist to mitigate these drawbacks.

Keywords: Early childhood education, Forest School, social-emotional development, outdoor education

INTRODUCTION

The Forest School is a student-centered educational model that supports learners in taking risks, emphasizes learning through play and exploration, and thereby contributes to the development of children's overall growth, especially in social-emotional development. It is implemented by practitioners trained in forest school education over an extended period of time (FSA, 2021). The Forest School views children not as passive recipients of knowledge but as creators of knowledge, allowing them to explore their surroundings in unstructured environments (Barrable & Arvanitis, 2019). It is a student-centered approach that takes educational activities beyond school boundaries, periodically conducted in natural environments such as wooded areas, at least twice a week and for extended periods (Harris, 2018). The Forest School aims to connect children with nature and develop environmentally protective behaviors. It was developed in the 1950s by Scandinavians who were aware of nature's contribution to child development, to help children understand the world they live in. Initially inspired by early childhood education institutions in Scandinavian countries that offered outdoor learning, the Forest School has become an educational approach that focuses on open-air learning and attracts significant interest (Harris, 2023). Since 1995, it has also been adopted in European countries (Murrey & O'Brien, 2005).

The education approach in forest schools is child-centered and supports learning opportunities for students. The roles of teachers and students change in these schools. Students exhibit greater engagement than in a conventional classroom and assume responsibility for their own learning. The teacher is more in the background, facilitating the learner to take responsibility for their

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learning and become aware of their own limits (Garden & Downes, 2023). Regular and short intervals of sessions in the forest over an extended period help each child learn in a way that aligns with their learning style and individual characteristics (Murray & O'Brien, 2005).

Since each child attending forest school has different learning and development needs and comes from various environments, their achievements in the forest school are also different (Harris, 2023, p.8; Murray & O'Brien, 2005, p.10). Consequently, it can be asserted that each child derives distinct advantages in accordance with their demands and particular traits. Forest schools provide a learning environment that is suitable for the personal characteristics of children (Pamuk & Ahi, 2019), allowing each child to learn at their own pace in a way that suits their learning style (Harris, 2018). This individualized learning approach facilitates the transition to the next stage of education and supports adaptation to it (Turtle et al., 2015; Murray & O'Brien, 2005).

2. Forest School

Forest school practices carried out in natural settings give a large portion, if not the whole time, to free play, allowing children to actively construct their own learning experiences (Mart & Waite, 2023). Since forest schools provide more space and freedom of movement compared to classroom settings, they allow students to interact more with each other and play cooperative games in harmony with the group (Ahi et al., 2023; Barrable & Arvanitis, 2019). Thus, it becomes easier for children to socialize, and their emotional development is supported (Harris, 2023). In forest school, children's abilities to act autonomously and find themselves adequate develop, and their feelings towards themselves, their environment, and nature change and improve positively (Barrable & Arvanitis, 2019; O'Brien & Murray, 2006).

Forest school education supports the development of children's social relationship building, teamwork skills, and their ability to cope with risky situations (Dabaja, 2022; Cudworth & Lumber, 2021). Observations indicate that children exhibit happiness when engaging in free play within natural environments, contributing to the development of positive self-confidence and self-esteem. (Pamuk & Ahi, 2019; Dabaja, 2022; Cudworth & Lumber, 2021). Children who exhibit shyness in expressing themselves within the classroom setting demonstrate greater success in self-expression and improved communication skills in natural environments. Additionally, students who struggle with traditional classroom activities adapt more effectively to the activities conducted in forest school settings. Furthermore, regularly engaging children in outdoor activities beyond the classroom plays a significant role in enhancing their attachment to school. (Cumming & Nash, 2015). It has been noted that even children who do not like being at school eagerly anticipate going to forest school (Harris, 2023; O'Brien & Murray, 2006). In forest school, children can control their own actions (Barrable & Arvanitis, 2019). The calming and relaxing effect of education offered in the open air has been observed to allow children with special needs to participate more effectively in education (Harris, 2023). In forest schools, each child constructs their own learning (Pamuk & Ahi, 2019). Forest school contributes to the practical development of children's learning skills (Harris, 2023; Murray & O'Brien, 2005; Dabaja, 2022; Cudworth & Lumber, 2021). They actively use scientific processes such as observing, hypothesizing, grouping, and conveying what they have learned (Pamuk & Ahi, 2109). Children who participate in forest school education develop creative thinking skills and mental processes (Sella et al., 2023). Research by Cumming and Nash (2015) also shows that students who spend time in the forest have higher imagination potential and creativity levels compared to those who spend time in the classroom (Turtle et al., 2015). Forest leaders (educators or teachers who provide forest school education and manage this process) have noted that children feel freer in the forest, decide themselves whether to move as a group or individually, and the noise levels decrease, leading to more permanent learning and more comfortable movement (Harris, 2018). While forest school practices support the development of positive emotions in children, they also provide opportunities for them to engage with challenges that foster resilience and problem-solving skills.

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Children receiving forest school education experience risky play and encounter problem situations they need to overcome. They try to find new solutions to solve these situations, developing their perspectives on risks (Pamuk & Ahi, 2019). In environments without significant risks, children can more easily take responsibility for their own actions. As they succeed in overcoming challenges, their self-confidence and self-esteem develop (O'Brien & Murray, 2006). The amount of time spent in natural environments where forest school education is implemented affects children's interaction with themselves, their peers, teachers, and the natural environment (Mart & Waite, 2023). The more time children spend in a natural environment, the more they feel a sense of belonging to it (Garden & Downes, 2023; Sella et al.„ 2023). This bond with nature does not form in a short time; it is a long process that helps children understand their surroundings better by activating all their senses together (Cudworth & Lumber, 2021). Children participating in forest school practices become aware of their surroundings, their curiosity is stimulated, and they begin to understand the life cycles occurring in nature (Mart & Waite, 2023). The bond they establish with nature helps them feel a sense of belonging to their environment (Dabaja, 2022; Cudworth & Lumber, 2021). Children who receive forest school education are more sensitive to the environment than those who do not (Turtle et al., 2015). Additionally, it has been observed that children involved in organizing school environments, tree planting, and creating natural spaces take pride in these activities and feel a sense of ownership (Cumming & Nash, 2015). Children who regularly visit and spend time in nature at an early age continue to enjoy spending time in these natural environments as they grow up. Regular time spent in nature also influences children's future career choices, steering them towards nature-related professions (Turtle et al., 2015).

2.1. Characteristics of the Forest School

The Forest School has its own unique ethical principles. These principles, adopted by the UK Forest School Association (FSA) in 2011, are as follows: Forest School is based on the principle of repeated short-interval sessions in a forest area with physical and operational boundaries, where children and the Forest School leader work interactively and harmoniously over an extended period. Forest School education is conducted in the forest because it provides numerous opportunities for children to act in ways that align with their innate characteristics. The forest helps children move freely and become aware of their personal competencies (Barrable & Arvanitis, 2019). Forest School education is shaped over time, prioritizing the interests and developmental needs of children. Although activities are planned according to predetermined themes, they can evolve into completely different subjects based on children's interests (Mart & Waite, 2023).

Careful preparation and planning are required for Forest School practices (Dillon et al., 2006). Forest School has carefully determined safety measures. The area is chosen from forested areas with low risk levels and defined boundaries. The forest is an ideal environment for experiencing and supporting autonomy and competence; it always has a solid yet flexible structure through consistent use of routines and rules. It is conducive to carrying out learning activities that align with the goals of the general education program (Barrable & Arvanitis, 2019). Meaningful and permanent learning is achieved by using all senses simultaneously (Murray & O'Brien, 2005; Turtle et al., 2015). Forest School education is delivered by teachers known as Forest School leaders who have received Forest School training. Forest School leaders are trained in child pedagogy and developmental characteristics, shaping wooden materials, making fires, and using tools (knives, saws, etc.) (Barrable & Arvanitis, 2019). It is important for the process to be continued and completed with the same leader (O'Brien & Murray, 2006). In forest education, when the child is accepted with love and respect by the Forest School leader and the group, they more easily adopt the group's values and develop a stronger relationship with nature. Therefore, the forest education leader has an attitude that listens to each child's ideas and makes the child feel valued (Barrable & Arvanitis, 2019).

Forest School not only offers unique interaction opportunities with nature and peers but also provides a valuable opportunity for child-teacher interaction (Sella et al., 2023). Forest School

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strives to instill respect for nature, environmental protection, and awareness of sustainable living (Barrable & Arvanitis, 2019). Children's curiosity is prioritized. One of the most distinctive features of Forest School is being in nature regardless of weather conditions in every season. This allows the child to observe, understand, and learn about natural changes from a primary source. Forest groups are formed by considering the ratio of children to adults. There are routines in forest education sessions that facilitate children's adaptation (O'Brien & Murray, 2006).

2.2. Forest school effect

The accelerated advancement of science and technology has shifted the focus of concern from nature's potential to harm humans toward the increasing awareness of how human activities threaten natural ecosystems. In parallel with this shift, contemporary societies have developed a heightened perception of risk regarding outdoor environments, particularly for children. Influenced by media coverage and societal anxieties, many parents perceive indoor settings as safer and more controllable, leading them to limit their children's engagement with nature (Gill, 2007; Savery et al., 2017). Consequently, formal educational institutions are often preferred under the assumption that they provide secure and structured environments. However, despite these prevailing concerns, a significant number of families continue to choose forest school programs. This suggests a growing recognition of the unique developmental benefits offered by nature-based education, which appear to outweigh perceived risks for many parents.

Purpose of the Research

A comprehensive review of the literature indicates that the effects of forest school practices have been examined from various disciplinary and thematic perspectives. While existing studies provide valuable insights into the cognitive, social, and emotional outcomes associated with forest school experiences, there remains a notable gap in the literature regarding an integrated and holistic analysis of these effects. In particular, few studies have systematically synthesized qualitative findings across different dimensions of child development within the context of forest school education. Addressing this gap, the present study aims to re-analyze and consolidate qualitative data from existing research to construct a comprehensive framework that captures the multifaceted impacts of forest school practices during early childhood.

In this study, the following research questions were posed to gather data on the impacts of early childhood forest school practices:

1. What impact do forest school practices have on the cognitive development of preschool-aged children?

2. What impact do forest school practices have on the social development of preschool-aged children?

3. What impact do forest school practices have on the emotional development of preschool-aged children?

4. What are the potential adverse effects or challenges associated with forest school practices?

METHOD

3.1. Research model

This study employed a meta-thematic analysis approach grounded in qualitative research methods. Meta-thematic analysis involves an analytical process wherein raw data from primary sources within scientific research documents are systematically coded and themed. These newly developed codes and themes are then utilized to generate novel insights and meanings from the analyzed studies (Batdı, 2019). The meta-thematic analysis process is document review-focused (Talan et al., 2020). In this context, meta-thematic analysis can be described as the process of

developing new codes and themes from the raw data of documents pertaining to the research topic and synthesizing these codes and themes to derive new insights and meanings relevant to the subject.

Meta-thematic analysis, introduced by Batdı (2017), is a form of analysis that combines qualitative data from studies on the researched topic to present and explain the subject in a broad framework. In the current study, qualitative research documents containing forest school practices were examined through meta-thematic analysis to determine the effects of these practices on the cognitive, social, emotional, and motor development areas of preschool children and to identify the limitations of these practices. The qualitative data of the studies included in the current study were analyzed based on document analysis, and the findings were obtained by coding the qualitative data of the reviewed documents.

3.2. Data Collection and Analysis

In this study, studies conducted on the effects of forest school applications were examined within the scope of meta-thematic analysis. Seven databases were used in the study: "Science Direct-SD", "Taylor and Francis-TF", "Higher Education Council Thesis Center (YokTez-YT)," "Dergipark", "ProQuest-PQ", "ERIC-E" and "Web of Science-WOS". The sources that were subjected to meta-thematic analysis in this research are given in the Table 1 below.

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Table 1. Articles analyzed in this research

NAME OF THE ARTICLE	DATABASE	AUTHOR	YEAR	SOURCE
Forest school based prosocial support program for 4-6 year olds children's prosocial behavior.	YOKTEZ	Elif Sureyya Kanyilmaz Live	2022	Canlı, E., S., K., (2022). Forest school based prosocial support program for 4-6 year olds children's prosocial behavior. Unpublished doctoral thesis. Gazi University, Institute of Educational Sciences, Ankara.
Evaluation of a forest school application.	Google Scholar	Elif Sureyya Kanyilmaz Live	2022	Canlı, E., S., K., Temel, Z., F., (2022). Evaluation of a forest school application. Mehmet Akif Ersoy University Journal of Education Faculty, 62, 431-454. DOI: 10.21764/maeuefd.1040654
Forest school practices on children's development Evaluation of the contribution of the subject	YOKTEZ	Omer Dilek	2019	Dilek, Ö., (2019). Forest school practices on children's development Evaluation of the contribution of the subject . Unpublished master's thesis. Kastamonu University, Institute of Social Sciences, Kastamonu.
Preschools implementing the forest school approach in Türkiye perceptions and experiences of risk in the implementation process of adults in institutions examination	YOKTEZ	Mehri Erol	2023	Eroğlu, M. (2023). Preschools implementing the forest school approach in Türkiye perceptions and experiences of risk in the implementation process of adults in institutions examination . Unpublished master's thesis. Fatih Sultan Mehmet Foundation University, Institute of Graduate Education, Istanbul.
An Evaluation of the Forest School Program in a State Preschool in Istanbul .	YOKTEZ	Sumeyra Busra Eroglu	2018	Eroğlu, S., B., (2018). An Evaluation of the Forest School Program in a State Preschool in Istanbul . Unpublished master's thesis. Boğaziçi University. Social Sciences Institute of Graduate Studies, Istanbul.
The Impact of Forest school within secondary school education : an exploratory case of key stage three pupils ' views	Google Scholar	Julia Alexander Hopkins	2022	Hopkins, J., A., (2022). The Impact of Forest school within secondary school education : an exploratory case of key stage three pupils ' views .Master Thesis . York St. John University , England . http://ray.yorksj.ac.uk/id/eprint/7236/
Forest school applications on preschool children on education, science and research	Google Scholar	Tugce Kanat, Serdar Arcagok	2022	Kanat,T . , Ar cagök , S., (2022). Forest school applications on preschool children on education, science and research. Journal of Education, Science and Research, 3(1), 167-195.

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| Forest school practices for preschool children on .	YOKTEZ	Tugce Kanat	2019	Kanat, T. (2019). Forest school applications for preschool children on . Unpublished master's thesis. Istanbul University. Cerrahpasa Graduate Education Institute, Istanbul.
Alternative approach in preschool education: Forest school's teachers, parents and administrators.	YOKTEZ	Merve Koyuncu	2019	Koyuncu, M., (2019). Alternative approach in preschool education: Forest schools teachers , parents and administrators. Unpublished master's thesis. Ankara Yildirim Beyazit University, Institute of Health Sciences, Ankara.
Forest School and its Impacts on young people children : Case studies in Britain.	Science Direct	Liz O'Brien Richard Murray	2007	O'brien , L., Murray , R., (2007). Forest School and its impacts on young children : Case studies in Britain. Urban Forestry & amp ; Urban Greening 6, 249–265. DOI: 10.1016/j.ufug.2007.03.006.
An evaluation of physical activity at forest school .	Google Scholar	Rebecca Lovell	2009	Lovell , R., (2009). An evaluation of physical activity at forest school . Unpublished Doctoral Thesis. The University of Edinburgh .
Re-establishing the relationship between the natural environment, the city and children, ''Nature-based education in Scandinavia and the Swedish forest school example''	YOKTEZ	Ayse Merve Rusli	2019	Paslı, A., M., (2019). Re-establishing the relationship between natural environment, city and child, ''Nature-based education in Scandinavia and the Swedish forest school example. Unpublished Master 's thesis. Istanbul Şehir University. Institute of Social Sciences, Istanbul.

The criteria for including the documents obtained on forest school applications in the meta-thematic analysis were determined as follows.

• It should be at the level of pre-school education (0-6 years old),

• It should aim to measure the effects and limitations of forest school practices on the cognitive,emotional and social context of children,

• It should be scientifically qualified and sufficient,

• It should include direct participant opinions,

• It should be a thesis or article.

Qualitative research studies related to forest school methodologies were identified through the application of document analysis techniques. The studies were selected through a systematic process involving preliminary readings, reviews, initial screenings, and full-text readings. Following this stage, both the short and long summaries of the selected studies were reviewed, and the findings sections were analyzed to determine their suitability for inclusion in the analysis process.

As seen in the PRISMA diagram in Figure 1, the selection process of the studies consisted of four steps. In this context, out of 725 studies that investigated the effectiveness of forest school practices between 2005 and 2023, 15 were excluded due to duplication, 235 due to irrelevant topics, and 255 because their summaries determined they did not have suitable content. Of the remaining 220 studies, 208 were excluded from the meta-thematic analysis because they did not

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meet the inclusion criteria of being qualitative in nature, including participants' views, containing data on the effectiveness of forest school practices, or having sufficient scientific characteristics. As a result of these procedures, 12 studies were included in the analysis process.
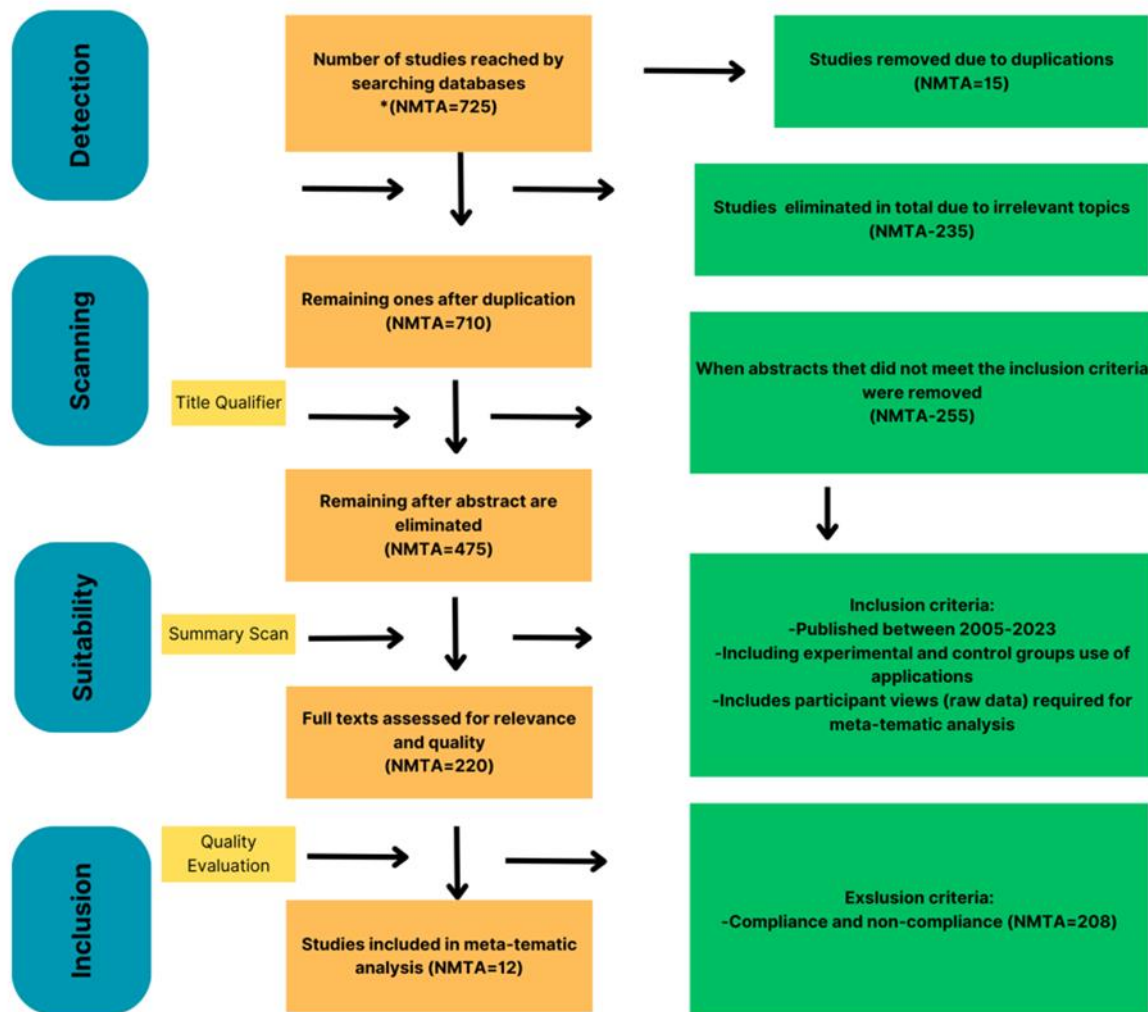
*NMTA: Number of studies included in meta-tematic analysis

Figure 1. Prisma Diagram for the Selection of Studies Included in the Meta-Thematic Analysis

In the present study, data from the studies included in the meta-thematic analysis were gathered using the document review method. Document review is a scientific technique that involves the content analysis of both printed and online electronic documents, encompassing the processes of selecting, interpreting, evaluating, and deriving meaning from the data within the documents (Bowen, 2009). Content analysis is a technique that involves systematically and impartially deriving meaning and reinterpreting data from the content of texts using an inductive approach (Koçak & Arun, 2006; Krippendorf, 2004). In this study, the primary source data from the studies included in the analysis were reexamined to generate new themes and codes, which were subsequently interpreted.

3.3. Coding Process

In documents, data value is held not just by the specified content but also by all of the variables that contribute to the description. According to Glaser, whom pioneered the grounded theory, anything has the potential to be considered data. The grounded theory is distinguished by objective data collection and interpretation that excludes the researcher's own ideas (Glaser,

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2007). In qualitative research, ensuring credibility is crucial due to the involvement of subjectivity and interpretation (Glasser & Holton, 2007). Qualitative research is a process involving logical questioning, a continuous search for answers, effective observations, and accurately recording the right data. Therefore, in qualitative research, the grounded theory method is used, which involves combining data, uncovering what is not explicitly stated, distinguishing important data from unimportant, logically synthesizing seemingly unrelated concepts and situations, and relating the obtained data to evidence (Glaser & Holton, 2007).

During the coding process, an important stage of the meta-thematic analysis process, participants' views from the included studies were re-examined and coded. Similar codes were categorized to create themes. In the coding process, the researcher labels the relevant data with the code derived from the raw data, documenting the data to which the code belongs. These small groups of information are then classified under themes based on their similar characteristics (Creswell, 2013). Through a systematic analysis of the data, five core themes were identified, each reflecting a distinct aspect of the impact and implementation of forest school practices.

The coding was performed independently by two coders: one being the researcher and the other an academic expert in the field. They independently examined the documents included in the analysis process and created different codes and themes. After this stage, they compared the created themes and codes, recording similar ones and discussing the compatibility and consistency of differing ones during meetings. Eventually, a certain level of agreement was achieved. The reliability between coders was calculated using Cohen's Kappa coefficient (Cohen, 1960), and the agreement value was found to be between .829 and .901, indicating good to very good levels of agreement.

3.4. Reliability in the Meta-Thematic Analysis Process

The meta-thematic analysis procedure employed in this study ensured reliability by following methodologies commonly used in qualitative research. In this process, the researcher and the research advisor worked independently, unaware of each other's efforts, to generate codes and themes. Similar codes and themes were then integrated, and any discrepancies were discussed and resolved through mutual agreement. According to Creswell (2013), reliability in qualitative research refers to the consistency of responses provided by multiple coders regarding the data they generate. In this context, the methodology employed in this study supported the reliability of the analysis process by ensuring consistency among multiple coders.

Additionally, Denzin's (1978) method of investigator triangulation, one of the ways to ensure reliability in qualitative research, was employed. Investigator triangulation involves multiple researchers participating in the process of data collection, analysis, code and theme creation, and interpretation of the obtained data (Başkale, 2016). Raw data related to the codes and themes were presented with quotations from the relevant studies. These quotations were numbered according to the studies from which the related codes and themes were derived, and the page numbers of the quotations were also coded and presented in the section containing direct quotations. In the current study, "M" represents articles-in Turkish "Makale=Article" ; "GS" represents Google Scholar, and for codes sourced from the National Thesis Center of the Council of Higher Education, the thesis number was indicated to form abbreviation codes.

RESULTS

4.1. Findings Related to the Meta-Thematic Analysis Process

The analysis of qualitative research data on forest school practices included in the meta-thematic analysis revealed various themes related to developmental areas. These themes include the impact of the practices on children's emotional, social, and cognitive development,

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the negative aspects of these practices, and suggested improvements. To ensure the findings are robust and clearly linked to the data, more detailed coding procedures are provided. This includes sample codes, references from the data sources, and tables/graphs illustrating the relationships between the codes and themes. The emerging themes and their related codes are presented through diagrams for clarity. Additionally, direct quotations from the data referencing the formed codes are included in the commentary to enhance transparency. For example, Figure 2 presents a diagram created with codes related to the theme "impact of forest school practices on children's emotional development," with each code interpreted and supported by reference sentences from the data.
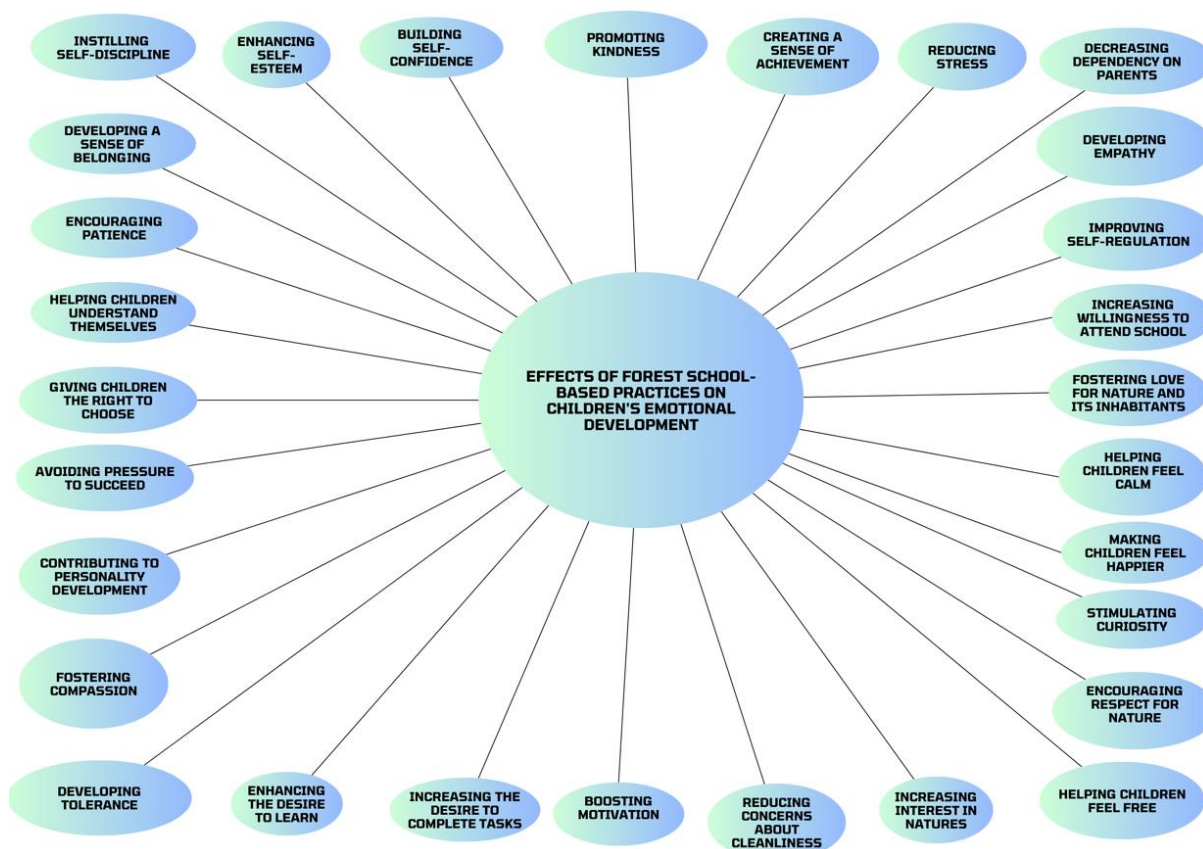

Figure 2. Effects of Forest School-Based Practices on Children's Emotional Development

The mentioned practices have several key benefits, including enhancing self-confidence, helping children feel calm and free, teaching respect for nature, and developing empathy skills. Here are some references to the data supporting these codes: "For example, when we say things like 'you'll fall, don't hold on there, don't go like that,' they say, 'No, I won't fall, I don't fall anymore, I can go myself. I can do it myself now.'" (737407-p.153) "He used to get angry very quickly at school. But I noticed he feels calmer on Forest School days." (532747-p.72) "I love coming here because I can play as I want." (536936-p.70) "They realize that plants, flowers, and animals have their own life cycles in nature and learn to respect them." (616799-p.56) "I can give an example of a child empathizing with the creatures in the stream by saying, 'Teacher, would you like to live with this trash?'" (745541-p.38)

Additionally, codes indicating the development of values such as patience, compassion, and tolerance were also identified. These findings suggest that forest school practices provide children with the opportunity to achieve tasks they previously thought they couldn't accomplish, creating a sense of achievement and fostering positive attitudes towards school. Thus, the data show that forest school practices positively impact children's emotional development.
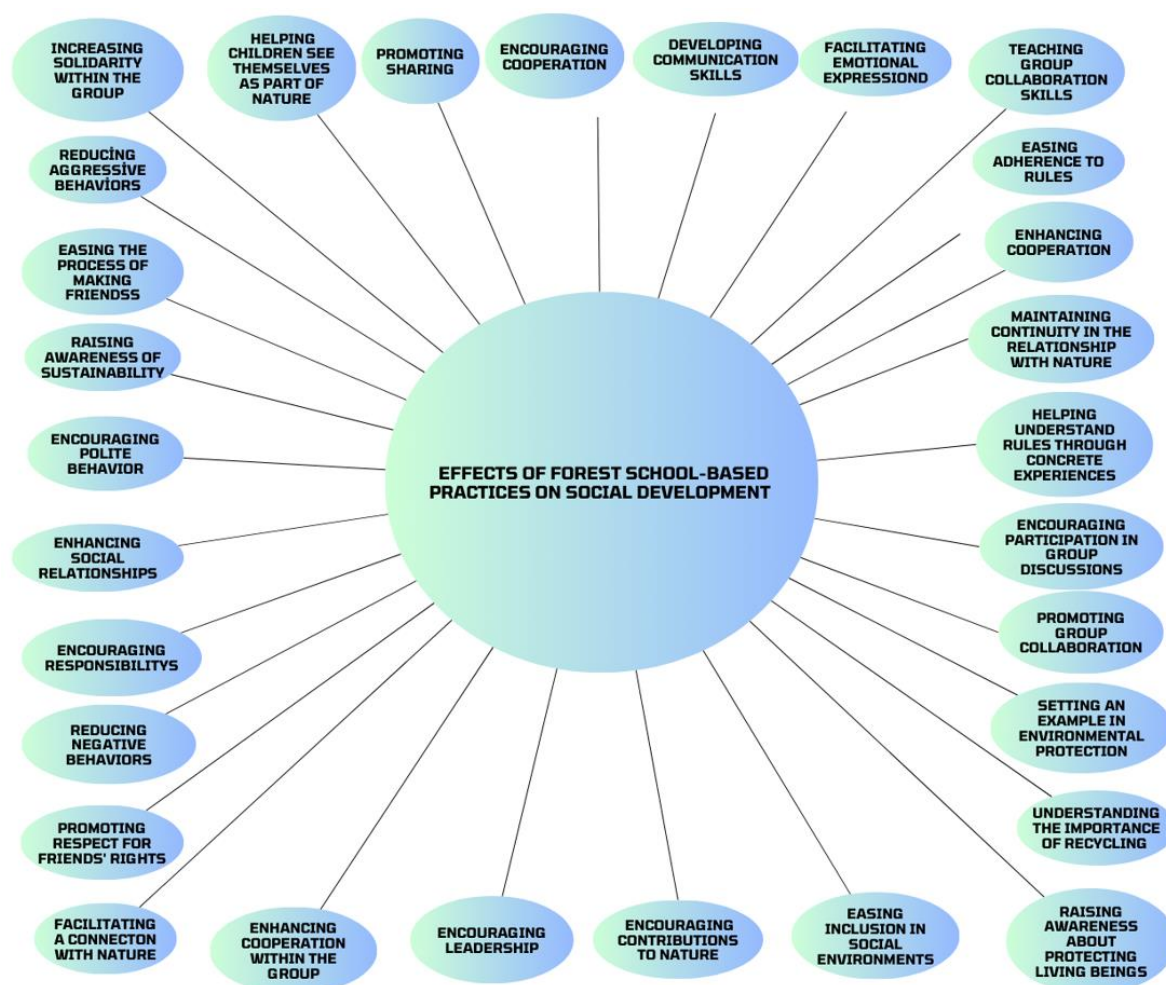
Figure 3. Effects of Forest School-Based Practices on Social Development

Figure 3 contains codes related to the theme of the effects of forest school-based practices on social development. These practices help children develop group collaboration skills, enhance cooperation, maintain continuity in their relationship with nature, ease the process of making friends, and establish a strong connection with nature. For instance, it has been observed that children's abilities to move as a group, use their imagination to create things, discover through play, research, and identify different sounds have improved (616799-p.50). They have also engaged in various activities cooperatively, such as building an ant nest through task distribution and collaborative efforts (737407-p.162). Even after the Forest School sessions ended, children continued bringing bugs and worms home, collecting seeds, planting them, and feeding the worms to chickens (532747-p.73). One child mentioned that Forest School helps new students make more friends if they want to (OO-M9 Hopkins, A., J., (2022) -p.49). Another child showed empathy by expressing concern for a wilting flower and offering to water it (536936-p.70). Additionally, forest school practices have a significant impact on preventing children from becoming indifferent to their environment. These practices not only develop crucial social skills such as cooperation, solidarity, and responsibility but also encourage self-expression, promote polite behavior, and ease adherence to rules. Overall, these findings indicate that forest school practices positively impact children's social development.

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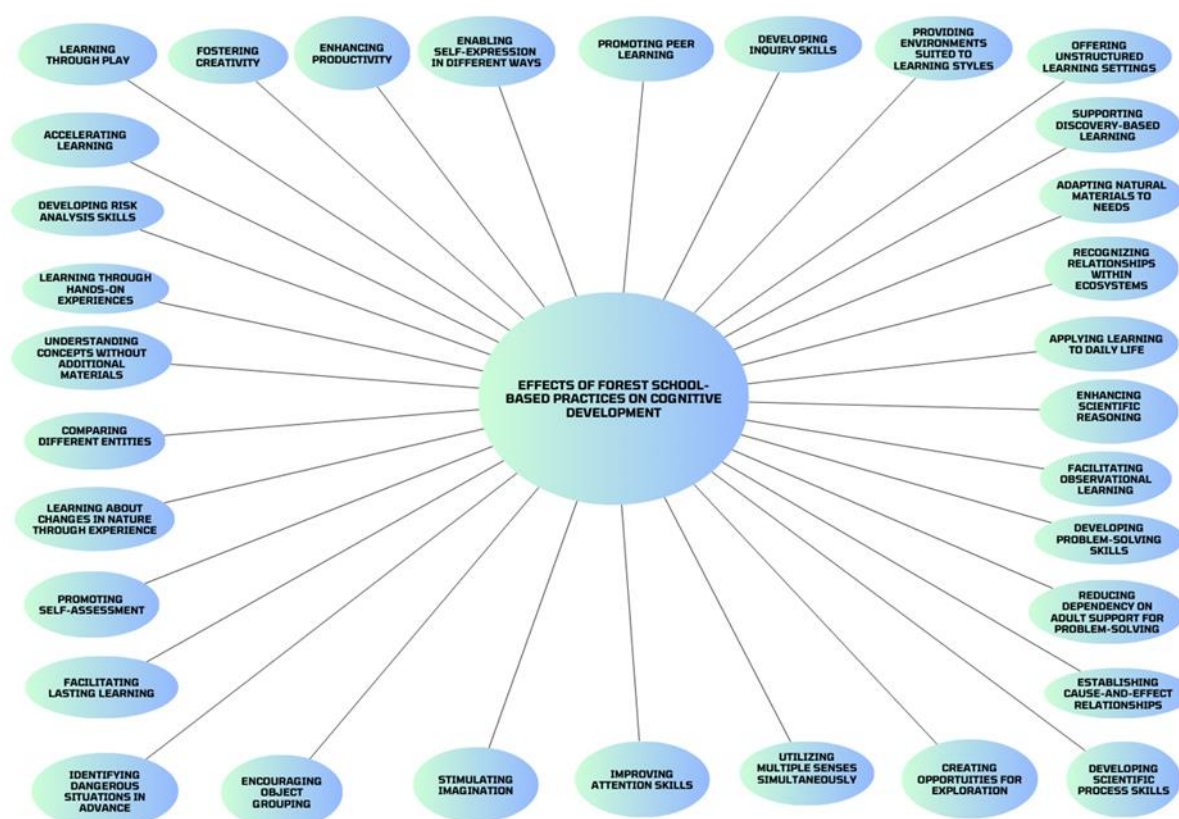**Journal of Interdisciplinary Educational Research** 2025; 9(20);186-203

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Figure 4. Effects of Forest School-Based Practices on Children's Cognitive Development

Figure 4 contains codes related to the effects of forest school-based practices on children's cognitive development. Some of these codes include enhancing problem-solving skills, developing scientific process skills, reducing the need for adult support in solving problems, establishing cause-and-effect relationships, and recognizing relationships within ecosystems. For example, "children can solve their own problems outside, in the garden, or at home, at least recognizing the situations as problems that need solving" (616799-p.64); "in the forest, children spent a long time breaking stones and made many observations about the hardness of different stones, classifying them based on these observations, and concluding that each type of stone has a different hardness and breaks differently depending on its material" (745541-p.32); "children are more attentive and calm in the forest. This means they try to solve problems together rather than shouting or asking the teacher for help when they don't want to. Everyone proposes an idea, and they try the most logical one. Through collaboration, they can solve all problems without help" (616799-p.48); "the wood is wet because of the rain, we can't burn it" (536936-p.59); "animals need trees to drink water," "people need trees to set up a dining table" (532747-p.73). These sentences can be referenced for these codes. Additionally, other codes indicate that forest school-based practices support creativity and productivity by encouraging the use of natural materials in unstructured environments to produce unique products, thereby enhancing imagination.

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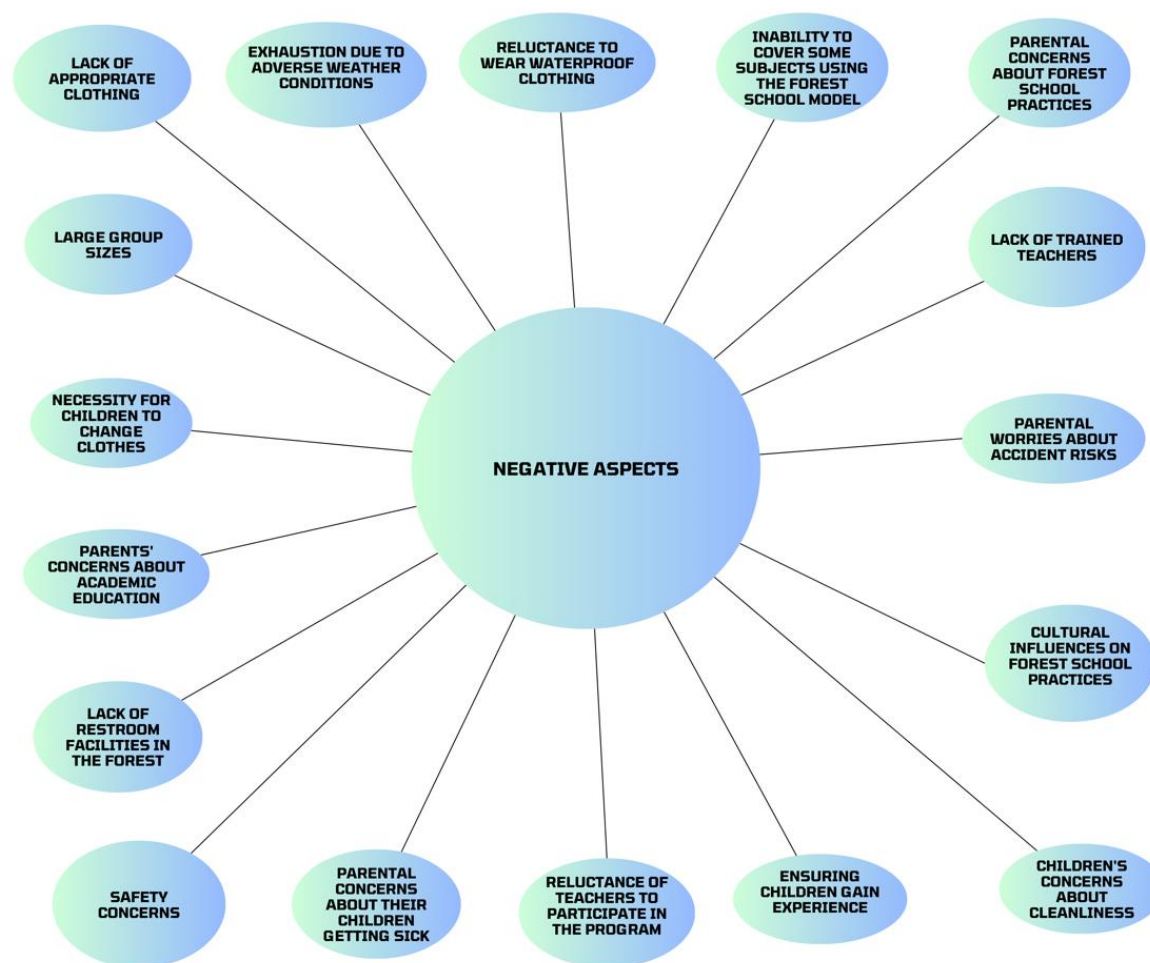**Journal of Interdisciplinary Educational Research** 2025; 9(20);186-203

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Figure 5. Issues Encountered in Forest School Practices

Figure 5 reveals codes related to issues encountered in forest school-based practices. Some of these issues include the lack of trained teachers in forest school practices, children's concerns about cleanliness, worries about risky situations in the natural environment, lack of restroom facilities in the forest, and safety concerns. For instance, "finding trained staff is very difficult. The biggest problem is not having teachers who have worked in this field" (543840-p.83); "she didn't hold natural materials, didn't touch the soil or mud, and started crying when there was sand in her boots" (532747-p.79); "there could be falling branches, poisonous mushrooms or plants, or a snake, scorpion, or bug that could suddenly appear" (786939-p.69); "I don't like going to the toilet because there is none" (Lowell, R., 2009, OO-M1 -p.238); "due to the lack of security, dogs in the forest come too close to the children, which worries us" (543840-p.112). These sentences can be referenced for these codes. Additionally, codes indicate that forest school practices are influenced by the cultural characteristics of the country. It appears that cultural characteristics have led to a negative perception of forest school practices among parents in our country.

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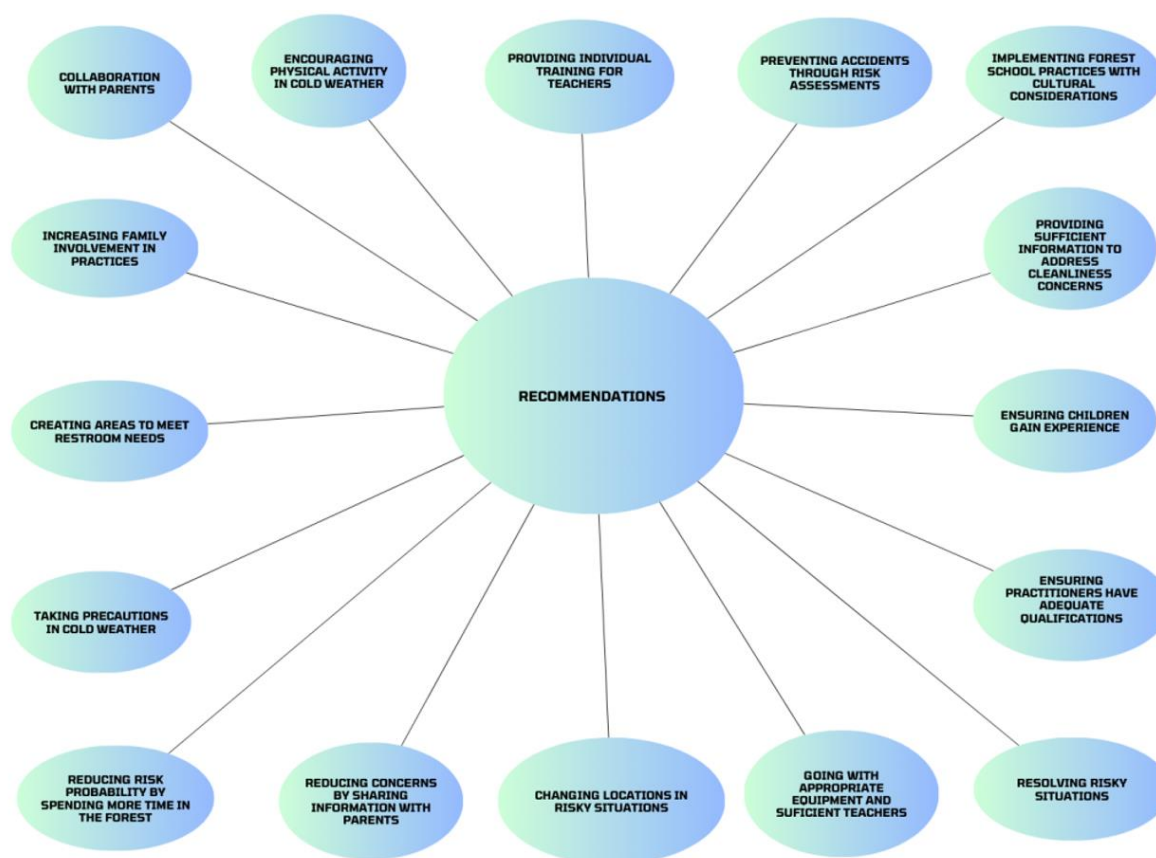**Journal of Interdisciplinary Educational Research** 2025; 9(20);186-203

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Figure 6. Recommendations for Addressing Issues in Forest School Practices

As seen in Figure 6, codes related to recommendations for addressing the negative aspects of forest school practices have also been identified. Some codes proposing solutions to certain negative situations include individual training for teachers, providing sufficient information to address cleanliness concerns, creating areas to meet restroom needs, preventing accidents through risk assessments, and resolving risky situations. The recommendation codes can be referenced as follows: "... I received education on Forest Pedagogy from Finland, Sweden, and finally Germany, and I tried to adapt it to our culture." (543840-p.124); "Even if our clothes get dirty, our teacher will wash them. Let's roll down here." (636936-p.65); "... with risk analyses carried out, a planned program, an ideal number of children and adults, and educated leaders (teachers), I don't think forest school is riskier than classroom education." (543840-p.86); Emily: "It should be like this, you know those small cubicles?" Reporter: "Yes, I mean, this would be better, right?" Emily: "Yes, one for boys and one for girls." (Lowell, R., 2009, OO-M1-p.238); "I called the municipality, informing them that I was educating in that area and had an issue with the dogs there. The next time we went, the dogs were gone." (786939-p.76).

The meta-thematic analysis carried out in this study indicates that, while there are many positive aspects of these practices, there are also some negative aspects. However, there are also solutions available to address these negative aspects.

CONCLUSION and DISCUSSION

To gain insights into the current condition of forest school-based practices, the researcher conducted a meta-thematic analysis of existing research studies in the literature. This analysis revealed that forest school activities positively impact children's emotional, social, cognitive, psychomotor, and linguistic development. The findings related to emotional development are consistent with O'Brien's (2009) research, particularly in promoting self-confidence and increasing motivation. The codes derived from the data indicate that children feel more comfortable expressing themselves in the forest school environment, where they feel freer,

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calmer, and happier (Harris, 2018). Additionally, forest school practices contribute to a range of emotional benefits, such as enhanced self-esteem, reduced stress, decreased dependency on parents, improved empathy skills, and the development of respect for nature and all living and non-living entities within it. These practices also foster curiosity, enable children to make independent decisions, and facilitate self-regulation. In particular, recent findings highlight the psychological benefits of forest school methods in alleviating stress and promoting happiness (Harris, 2023; Pamuk & Ahi, 2019), which in turn increase children's motivation and desire to attend school. Therefore, it can be concluded that forest school practices play a crucial role in providing emotional support to children, contributing to their overall well-being. However, while the literature provides valuable insights, further analysis is required to directly address specific research questions regarding the impact of forest school practices in preschool settings. The current findings primarily reflect literature-based conclusions, but the discussion would benefit from a deeper exploration of how these practices specifically manifest in preschool environments. More empirical evidence from preschool settings would help expand the understanding of how forest school practices can be effectively implemented and assessed for their impact on young children's development.

The theme of the effectiveness of forest school practices on social development reveals that these practices help children develop social skills such as cooperation, sharing, collaboration, and solidarity within social groups, as well as the ability to move in unison with the group (Ahi et al., 2023; Barrable and Arvanitis, 2019). It was found that they also develop leadership skills, enable positive relationships with their surroundings, instill a sense of responsibility, encourage polite behavior, and make it easier to make friends. In this context, it can be concluded that forest school practices enhance social skills and facilitate inclusion in social groups. Developing positive relationships with friends and teachers in forest school classes helps children more easily adopt the group's values and establish a stronger connection with nature (Barrable and Arvanitis, 2019). Research on the effects of forest school shows that regular and continuous forest school activities in forests or natural environments help children see themselves as part of nature, bond with nature, and explore the cycle of nature through experience (Dabaja, 2022, p. 746; Cudworth and Lumber, 2021, p. 2). At this point, it can be said that the findings of the current study are consistent with the results of these studies. This bond with nature does not form in a short period; it is a long process. The amount of time spent in natural environments where forest school education is implemented also affects children's interactions with themselves, their friends, teachers, and the natural environment (Mart and Waite, 2023). The more time children spend in the natural environment, the more they feel they belong to it (Garden and Downes, 2023; Sella et al., 2023). Therefore, conducting forest school activities regularly and at frequent intervals can positively affect the effectiveness of these practices.

One of the themes that emerged from the current study is the impact of forest school practices on cognitive development. It can be concluded that forest school practices positively affect student-teacher relationships and provide a flexible learning environment that allows for discovery-based learning (Harris, 2018), thus helping children to practice their learning skills (Dabaja, 2022). Additionally, providing opportunities for using all senses simultaneously during the learning process makes learning easier by aligning with each child's learning style and individual characteristics (Murray and O'Brien, 2005; Turtle et al., 2015). The development of scientific process skills such as observation, comparison, and data recording by forest school practices is consistent with the findings of Pamuk and Ahi's (2019) research. Besides, the findings of the current study indicate that forest school practices improve children's imagination, concentration, and attention skills, enable them to transfer and reuse what they learned in daily life, enhance problem-solving skills, and contribute to logical thinking and scientific reasoning by fostering cause-and-effect relationships. Additionally, codes related to the positive impact of forest school-based practices on children's motor and language development were found in the current study. Codes such as improving motor skills (T2, p. 60), providing ample space for active games (T3, p. 86), enhancing endurance (T7, p. 158), and developing body

coordination (T9, p. 77) indicate that forest school-based practices positively impact children's motor development.

Alongside the positive aspects of forest school practices, some negative situations also draw attention. It was observed that parents were concerned about their children getting sick when going to the forest in cold weather and the forest environment being open to certain risks and dangers. These concerns are also among the findings of Dillon et al. (2006). Dillon and colleagues (2006) recommended that the forest school implementation process be carefully planned and applied, and these activities be evaluated and necessary adjustments made in schools to eliminate these concerns. Furthermore, sufficient information should be provided to parents and children, and as much as possible, family participation activities should be included.

Teachers and administrators who participated in the research studies analyzed in the meta-thematic analysis found solutions to these concerns and potential risks by encouraging children to be active in cold weather, ensuring they wear weather-appropriate clothing and shoes, conducting risk analyses before activities to minimize risks, and changing locations when encountering risky situations. Another negative aspect related to forest school practices is the lack of sufficient awareness about these practices. Parents focusing on their children's academic success may find forest school practices unnecessary. Forest school pedagogy, which is student-centered, aims to enable students to build their own learning through hands-on experience and observation, unlike the subject-focused and academic success-oriented programs applied in schools (Harris, 2018). Scientists state that if a healthy connection is established between forest school practices and school practices (Dillon et al., 2006), it will support school learning and increase students' academic success (Harris, 2018). Some studies analyzed in the meta-thematic analysis mentioned that the low number of teachers trained in forest school pedagogy makes it challenging to effectively implement these practices. This deficiency has been addressed by supporting teachers' professional development through in-service training provided by institutions or by teachers themselves seeking education in this field.

This study found that forest school methods had numerous benefits for children's emotional, social, and cognitive development. In this context, it is believed that incorporating forest school principles into existing educational programs can benefit children's academic progress. Furthermore, giving pre-service and in-service training to teachers in forest school pedagogy can help to increase the effectiveness of these practices and extend them throughout our country's educational system.

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The bibliography should be prepared in accordance with the publication principles of the APA 6 Publication Manual. For more information, see http://www.apa.org. References, including the title, should be written in alphabetical order in 10 font size, single-spaced, without any spaces. Paragraph indentation is 1.16 cm hanging from the right.

The second and subsequent lines of each bibliography should be indented by 1.16 cm as shown in this text.

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Competing interests

The author(s) declare no competing interests.

Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethical approval statement

Ethics approval was not required

Informed Consent

This study does not involve human participants or their data

Author contributions

These authors contributed equally to this work

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