

Preschool Education Curriculum in Türkiye: Alignment with 21st-Century Skills*

Kevser Özel

Ministry of National Education, Bayburt, Türkiye

Nermin Karabacak¹

Recep Tayyip Erdoğan University, Rize, Türkiye

ABSTRACT

In this research, aiming to contribute to the compatibility of the preschool education curriculum with 21st century skills, the goal was to investigate the reflections of experts about the compatibility of the preschool education curriculum outcomes and indicators with 21st century skills. As no research was found in which field workers evaluated and synthesized the compatibility of the preschool educational curriculum with 21st century skills in the literature, it is expected that this research will contribute to the field. In line with this aim, the research used a case study design from the qualitative research methods. In the research, a total of six academics, employed in public universities and working with preschool 21st century skills, were included as participants. The qualitative data for the research were collected through semi-structured interviews and document analysis. Data were analyzed with the thematic analysis method. The results of the research, when synthesized using an inductive approach, determined that the preschool curriculum outcomes and indicators did not provide intellectual development, and that critical thinking and logical activities were inadequate, along with experiments, non-curriculum activities and activities developing the imagination. The results of the research revealed that, as well as updating the preschool curriculum by supporting current 21st century skills in education, there is a need to cultivate employees in preschool educational institutions equipped with 21st century skills during preservice training.

KEYWORDS: 21st century skills, preschool educational, reflection, preschool curriculum.

*This research was derived from Kevser Özel's master dissertation

¹Corresponding author; Recep Tayyip Erdoğan University, Faculty of Education, Department of Education Sciences, Rize, Türkiye, Email: nermin.karabacak@erdogan.edu.tr

Copyright © 2026 by Author(s) and Licensed by CECS Publications, United States. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Literature Review

The aim of educational institutions, founded to cultivate qualified people, is that the individual acquires 21st century skills. As a result, teaching policies undergo continuous change and innovation. It is important for individuals to acquire and apply these skills to be part of society and to sustain life within society healthily. Hviid and Martsin (2019) stated that education has a very important function in relation to bringing the lives of individuals and the society in which they live to more qualified levels. Preschool education is the educational process shaped by the completion of the majority of bodily, motor, social, emotional, mental and linguistic development directing the whole of life for children, encompassing the years until the day they start primary school. The critical preschool period is when children's development and learning is most rapid, the basis for personality development is laid, and basic skills necessary for lifelong learning, social adjustment and success in later periods of life are gained.

Preschool educational curriculum targets for children receiving education in preschool educational institutions include supporting healthy development processes in children, bringing their motor skills, social and emotional development, linguistic skills and cognitive capabilities to the highest levels, gaining basic self-care skills and preparing them for primary school (Çetinkaya & Tabak, 2019). An educational curriculum is required to be able to achieve the targets determined and for the process to proceed in a planned manner in education. A qualified curriculum may have an important place in the life of the child.

The Ministry of National Education (MoNE) preschool curriculum forms a standard framework for the field of preschool education in Türkiye. This curriculum was designed to support the cognitive, emotional, social and physical development of children. One of the basic targets of the curriculum is that students acquire 21st century skills and be prepared with skills for life in the future (Dinler et al. 2021).

Currently, 21st century skills are one of the key elements at the forefront in education and working life (Trilling & Fadel, 2009). Twenty-first century skills are knowledge, skills, personal qualities, and cognitive traits individuals' comprehensive skills that must be acquired for individuals to be able to effectively contribute to an information society. These skills are not limited to one certain area, but prepare the individual to adjust to the requirements of the age and contribute to society. These comprehensive skills involving knowledge, personality and mental characteristics bring together a variety of elements required for individuals to be successful in the modern world (Voogt & Roblin, 2012). Competencies like critical thinking, problem solving, communication skills, cooperation and teamwork comprise the basis of this concept. These skills support individuals in being able to keep up with rapid changes in the information society and being able to contribute effectively.

Research in the literature identified that attitudes to 21st century skills begin to be shaped in the preschool period. These skills children's problem-solving, self-regulation, and social-emotional development gained in the preschool period were identified to have an important place in being able to cope with problems in future years and developing positive attitudes about being a productive individual (Geisinger, 2016; Tuğluk & Altın, 2018; Bobrowicz, 2024; Güley & Keskinkılıç, 2024). It has been found that fostering skills such as critical thinking, communication, collaboration, creativity, and digital literacy during the preschool period supports academic achievement, problem-solving, and lifelong learning in later years.

Twenty-first century skills are classified on a different basis by different institutions and organizations (The European Union, OECD, UNESCO, EnGauge, ATC21S, and the P21 – 21st

Century Skills Partnership). Among these classifications, the 21st Century Skills Early Learning Framework offers the knowledge and skills that need to be learned beginning in the preschool period by individuals in order to be able to cope with difficulties in work and daily life in the 21st century and systems that can be used to support this knowledge and skills in a comprehensive form (Battelle for Kids, 2023; Care, Griffin & Wilson, 2022; OECD, 2023).

Within the scope of 21st century skills classification, the P21 platform was founded with cooperation between educational leaders and policymakers. This platform stands out compared to other classifications because P21 – 21st-century skills – are strongly supported and guide curriculum policies and educational practices (Binkley et al. 2012; Karaca-Atik & Smeets, 2024). For this reason, this research study is based on the the P21 classification of 21st century skills. The P21 classification of 21st century skills are presented in the following table.

Table 1

P21 21st Century Skills Framework

Learning and innovation skills	Life and career skills	Information, media and technology skills
Creativity & innovation	Flexibility & adaptability	Information literacy
Critical thinking & problem solving	Initiative & self-direction	Media literacy
Communication	Social & cross-cultural interaction	ICT (Information & Communication Technology) literacy
Collaboration	Leadership & responsibility	

Efforts are underway to integrate skills considered important in the context of Twenty-first century skills into education systems and to make changes to educational curricula to support the development of these skills (Care, Kim, Vista, & Anderson, 2018). Twenty-first century skills, which blend knowledge and skills, focus not on the body of knowledge individuals possess, but rather on what they can do with that knowledge (Silva, 2020).

In the preschool period curriculum implemented in Türkiye in 2004, common skills in all lessons included critical thinking, creative thinking, communication, research, problem solving, decision making, use of information technologies and entrepreneurial skills (OECD, 2009; OECD, 2018). Twenty-first century skills are included in educational curricula in OECD countries like Australia, Canada, Finland, Belgium, Ireland, Italy, Norway and New Zealand. Investigations of the relevant literature related to evaluation of preschool education curricula within the scope of 21st century skills in Türkiye found these skills emerged as an important topic of research in the field of education (Aşkar, 2023; Bulut, 2022). In these studies, aiming to evaluate the efficacy of curricula about educating children in the preschool period, the focus appeared to be the effects of preschool education curricula on cognitive, social, emotional and motor development (Çetin & Çetin, 2021; Dinler et al.). In this period, children's potential and learning experiences should be supported by a qualified curriculum encompassing academic, social and emotional skills (Akpınar & Kandır, 2022; Bredekamp, 2017). In Türkiye, since 1952 seven preschool education curricula were developed including the 1952, 1989, 1994, 2002, 2006, 2013, 2024 final preschool education curriculum.

The historical development of preschool education programs in Türkiye began in 1952 and has undergone various forms of restructuring over time in response to changing educational philosophies, approaches to child development, and societal needs. While the program developed in 1952 focused on meeting children's basic developmental needs and organizing care and educational services, the 1989 and 1994 programs introduced provisions aimed at defining the objectives of preschool education, supporting children's developmental domains, and planning educational activities in a more systematic manner. In the 2002 and 2006 programs, the child-centered approach was further strengthened, with greater emphasis placed on holistically supporting children's cognitive, social-emotional, language, motor, and self-care development, as well as on activity planning and increased family participation. The 2013 Preschool Education Program addressed the developmental and child-centered approaches more comprehensively by emphasizing the organization of learning processes in accordance with children's individual characteristics, interests, and needs and by supporting development across domains in an integrated manner. In the 2024 Preschool Education Program, the developmental and child-centered approaches of previous programs were retained, while a skills-based and holistic structure was further strengthened. The program places greater emphasis on developing children's skills, structuring learning processes holistically, integrating values into the educational process, and conceptualizing learning outcomes from a skills-based perspective. Overall, the development of preschool education programs in Türkiye reflects a gradual transformation from an emphasis on meeting children's basic care and developmental needs toward a child centered and developmental approach and, more recently, toward skills based, holistic, and values-oriented program framework (MoNE, 2013; MoNE, 2024; Tuğluk & Özkan, 2019).

Research in the literature in Türkiye identified that the outcomes and indicators related to 21st century skills in the Ministry of National Education preschool education curriculum were inadequate (Kalaycı & Bayrakçı, 2025; Tuğluk & Özkan, 2019). This situation shows the need to update the preschool educational curriculum and make it appropriate for the requirements of our age. It is important that these updates be implemented in a way that will ensure the development of children's skills like communication, problem solving, critical thinking, cooperation, innovation and creativity. Acquiring these skills in the preschool period will increase the chances of being more successful during progressive educational levels. In the last ten years, 21st century skills have become an important focal point in the field of education (Akyol & Aşkar, 2022; Geisinger, 2016). As a result, they play an important role in the MoNE preschool educational curriculum (MoNE, 2013; Sumantri et al. 2021).

While the development of educational programs in Türkiye is guided by national education policies, recent research indicates that early childhood education programs grounded in contemporary scientific principles can support children's processes of inquiry, exploration, and creation through the use of digital tools (Fleer, 2021). Research also suggests that in programs in which the transmission of values is strongly emphasized, teacher-centered practices may become more prevalent, potentially limiting opportunities for children to engage in independent thinking (Wood, 2020). In countries such as Finland, New Zealand, and Canada, early childhood education programs are not structured primarily as lists of values and content; rather, they are supported by implementation frameworks that incorporate teacher guidance, assessment systems, and digital pedagogy, thereby facilitating the integration of 21st century skills into educational practices (Fleer, 2021; Sahlberg, 2021; Wood, 2020).

In the present study, the 21st century skills reflected in the MoNE 2013 Preschool Education Program were examined in depth from the perspectives of subject-matter experts. During the course

of the study, the curriculum was revised in 2024. Because the initial phase and data collection process of the study were based on the 2013 curriculum, a direct comparison between the 2013 and 2024 curricula was beyond the scope of the study. Nevertheless, the 2013 curriculum provides an important reference point for understanding the development of 21st century skills in the 2024 curriculum. Studies examining the 2024 curriculum have likewise referred to the 2013 Preschool Education Program.

An examination of the MoNE 2013 Preschool Education Program indicates that it contains elements associated with critical thinking, creativity, digital literacy, and higher-order cognitive skills. This suggests that the integration of competencies commonly associated with 21st century skills had already become evident in Türkiye's preschool education curriculum (MoNE, 2018). This orientation is further reflected in the 2024 curriculum, which builds upon and extends several elements present in the 2013 curriculum within a more explicitly skills-based framework.

Recent studies indicate that, within the framework of 21st century skills outlined in the 2024 Preschool Education Program, elements related to digital literacy, media literacy, and technology integration remain limited, and that clear guidance on how these skills can be translated into classroom practices is insufficient (Erdoğan & Bayraktar, 2026; MoNE, 2024). In addition, despite the program's adoption of a skills-based approach, concerns have been raised regarding persistent uncertainties at the implementation level, particularly the lack of concrete guidance for teachers on how to implement skills-based learning. Concerns have also been expressed regarding the prominent place accorded to values education in the program and the ideological reframing of certain concepts (Kadırlan & Şat, 2025). A study conducted by Güven and Dere (2025) similarly revealed that the 2024 curriculum places strong emphasis on the development of national and spiritual values. As a component of national education policy in Türkiye, values education, grounded in national, spiritual, and religious values, has been incorporated across educational programs from early childhood education to higher education, including teacher education programs.

The 2024 Preschool Education Program, developed by the Ministry of National Education (MoNE, 2024), is presented as a new curriculum centered on 21st century skills and national and spiritual values, with the aim of establishing a skills-based, simplified, and holistic educational framework. However, recent research has questioned whether these policy claims are sufficiently supported by empirical evidence and has argued that spiritual and religious values are incorporated into the curriculum through an ideological framing.

During curriculum development and revision processes, identifying problems arising from implementation, systematically considering feedback from teachers and subject-matter experts, and making necessary adjustments and revisions on the basis of empirical findings could help strengthen the scientific foundations of curriculum development. Such a process could contribute not only to the theoretical development of curricula but also to their functionality and applicability in practice. In this context, a more systematic evaluation of empirical evidence obtained from the implementation of the 2013 curriculum during the development of the 2024 curriculum could have contributed to a more functional and contextually grounded structuring of 21st century skills within the curriculum.

The development of preschool education programs in Türkiye raises questions not only about how 21st century skills are incorporated into curricula but also about how these skills are structured through program objectives, learning outcomes, and indicators and how they are translated into classroom practice. In particular, examining the 2013 Preschool Education Program from the perspective of 21st century skills are important for determining the extent to which these

skills are reflected in its learning outcomes and indicators. A systematic examination of challenges identified during the implementation of the 2013 program, together with the evaluations of field experts, can help identify the program's strengths and areas for improvement with regard to 21st century skills. Therefore, examining the alignment of the 2013 Preschool Education Program with 21st century skills from the perspectives of field experts is important both for evaluating the program and for establishing a scientific basis for future curriculum development and revision efforts. Accordingly, the purpose of this study is to conduct an in-depth examination of the alignment of the 2013 Preschool Education Program implemented in Türkiye with 21st century skills based on the perspectives of field experts. Specifically, the study seeks to determine the extent to which the program incorporates 21st century skills, particularly through its learning outcomes and indicators, and how its adequacy in addressing these skills is evaluated.

In line with this aim, answers to the following questions were sought:

- 1) Are the outcomes and indicators of the 2013 MoNE preschool educational curriculum compatible with 21st century skills?
- 2) Is the 2013 MoNE preschool educational curriculum at adequate level in terms of 21st century skills?

Research Methodology

Research Design

This research was designed with the qualitative method. The research was completed based on the case study model. A semi structured interview method appropriate for the nature of qualitative patterns was used. For semi structured interviews, an interview form was prepared containing questions previously planned by the researcher and a technique was used that ensured the person could expand their responses in detail by asking different sub-questions linked to the flow of the interview. In this case study research, academics employed in public universities and working with 21st century skills provided in depth rich data through semi-structured interviews about the compatibility and adequacy of the 2013 MoNE preschool curriculum in relation to 21st century skills (Creswell, 2015).

In the research, the status of acquiring 21st century skills through the 2013 MoNE preschool educational curriculum was supported with a literature screening model based on document investigation. The literature screening model in the research was based on collecting data by systematically investigating previously published academic studies about the topic, official reports, books, these and other documents. This model was appropriate to achieve the basic aim of the research, synthesize existing information and determine gaps.

Participants

The study group for the research was determined using the targeted sampling method. The research was completed with academics working with preschool 21st century skills employed in public universities in different cities during the 2024 spring semester. The number of expert educators in the field of preschool 21st century skills in Türkiye is very limited. In this research, this limited number of participants was reached. The first researcher listed academics working with preschool 21st century skills according the criteria of being included in articles and projects within the scope of this topic in the literature and investigating the websites of public universities. The

field experts on this list were reached by telephone and preliminary interviews were held giving information about the research. These academics participated voluntarily to support the research. The study group comprised a total of six academic participants. Two of the participants were doctor lecturers, three were associate professors and one was a professor. Among the participants, two were men and four were women. The working years of participants varied from 10 to 25 years. Two of the participants had participated in in-service training about preschool 21st century skills, while four had not. Participants in the study group were competent people employed in the field of preschool 21st century skills in Türkiye for a long duration. In this context, it is thought that this research will contribute to the literature.

Ethical Considerations

This study was conducted in accordance with ethical standards for research involving human participants. The research protocol was reviewed and approved by the Institutional Ethics Board (IRB Approval No. 2023/102). Participants provided informed consent prior to participation. Participation was voluntary and participants were informed of their right to withdraw. Confidentiality and anonymity were maintained by securely storing data and removing identifying information from all analyses and reports.

Instrument and Procedures Data Collection Instruments and Techniques

Qualitative data in the research were collected with the semi-structured interview technique. Semi-structured interviews analyze a social case in depth through the statements of individuals. (Iosifidis, 2003; Tsiolis, 2018). In the context of developing the semi-structured data collection form within the scope of the research, the literature was investigated in-depth with the aim of determining the compatibility of the outcomes and indicators of the 2013 preschool educational curriculum in Türkiye with 21st century skills. Based on the literature, questions were prepared about demographic information along with the semi-structured interview questions. The semi-structured interview questions used in this research were prepared by the researchers based on the literature. For a pilot application, opinions were sought about scope and linguistic validity of the semi-structured interview questions from an expert in the field. Corrections were made according to feedback from the expert and a pilot interview was completed using the preliminary interview form containing the corrected semi-structured interview questions. The understandability of the questions was clarified and the semi-structured interview form was given its final form. Questions were designed to reveal the experiences of participants. Ethical approval was obtained for the research from the relevant institution after creating the data collection tool that would be used with the aim of collecting data in the research. Afterwards the participants identified as the study group were reached.

Individuals in the participant group had interviews performed by telephone after being given information about the aim and content of the study. All interviews were recorded by the first researcher using a digital voice recording device. Interviews lasted from 25-30 minutes. Participants were asked two semi-structured interview questions:

- 1) Can you explain the compatibility of the outcomes and indicators in the MoNE preschool educational curriculum with 21st century skills with your reasons?
- 2) What is the adequacy level of the MoNE preschool educational curriculum in acquiring 21st century skills? Can you explain with your reasons?

Data Analysis

Semi-structured interviews in this research were analyzed using thematic content analysis. The use of thematic content analysis allows the opportunity to explain, define, analyze and report themes within the data (Braun & Clark, 2006). To be able to reach the most appropriate themes for the aim of the research, themes in the data were identified using an inductive approach associating themes with data, instead of attempting to adapt to pre-existing data codes (Cohen, Manion & Morrison, 2007). Thematic content analysis was completed in six stages of learning the data, creating initial themes, researching themes, revising themes, identifying and naming themes, and creating a report (Braun & Clark, 2006).

All interviews were transcribed by the first researcher. The research team separately analyzed and coded the data word by word (e.g., certain concepts like 21st century skills, outcomes) and paragraph by paragraph (e.g., participants describing how 21st century skills in the preschool curriculum were important) using the qualitative data analysis software Nvivo 14. Later the research team met in person and thematic coding was performed for initial themes based on this coding. From the significant constructs of codes, categories were obtained and from categories, themes were obtained and given their final form. For the codes, each code was discussed to ensure code consensus. After combining all themes, the report of the results was written.

In the findings section, opinions of participants are presented as reflected in direct quotations. Due to the confidentiality principle, participants are identified by coding their real names. Participants are labeled using codes like K₁, K₆ for each one. Themes emerging are grouped according to the subproblems in the research. Presentation of findings was completed with the approach of showing data according to themes (Marshall & Rossman, 2016).

Validity and Reliability

In qualitative research, validity and reliability are the two most important criteria used to ensure the credibility of the results of qualitative research and the reliable interpretation of findings. Validity and reliability of the research were ensured with credibility, transferability, consistency and confirmability (Lincoln & Guba, 1985).

Credibility is related to the level of reflection of the participants' real-life experiences in interpretations related to the topic of the research and the research results obtained. The selection of the qualitative pattern used in the research, development process for the data collection tool, identification of participants forming the sample of the study, and presentation of descriptive information related to the participants and participant numbers are explained in detail. Semi-structured interviews were used to obtain in-depth data. With the aim of increasing the credibility of the research, participant confirmation was applied and the accuracy of findings was supported with participant feedback (Creswell & Miller, 2000; Lincoln & Guba, 1985).

Transferability is the transfer of the concept and themes obtained from the findings to readers by remaining loyal to the nature of the data and without interpretation, only with reorganization. Ensuring transferability is linked to describing the research process and context in detailed form. In this research, the opinions of participants are given directly (Lincoln & Guba, 1985). In themes, data are supported by direct quotations where necessary. Due to the confidentiality principle, codes are used instead of real names for personal data about which participant provided the quotation given in the research.

Confirmability is the consensus between coders based on multiple coders analyzing the transcribed data (Miles & Huberman, 1994). In other words, the research results are proven to have been determined based on data that is independent of the researchers' bias. In this research, instead of the researcher's interpretations being based on personal assumptions, they were supported by the collected data (Lincoln & Guba). Through the use of reflexive notes, the researchers ensured continuous assessment of the effect of their own placement, assumptions and processes (Creswell, 2015). This practice shows that findings were produced based on data and the research process was completed in a transparent fashion.

Consistency is the criterion evaluating how the process in qualitative research is completed in an observable, logical and systematic way. In this research, the research method and implementation stages were clearly defined by the researchers and the research process is explained in detail in the methods section (Lincoln & Guba, 1985). The data collection and analysis processes in the research were defined step-by-step and coding stages, theme creation and decision-making points are explained in detail (Miles et al. 2014). The data collection tools used in the research process, raw data, coding files, researchers' notes and records related to the analysis process were stored in an electronic environment for later investigation (Creswell, 2015).

In the context of research with experts working on preschool 21st century skills, the compatibility of the MoNE preschool educational curriculum with 21st century skills are presented with the results of thematic content analysis.

Research Results

In the context of research with experts working on preschool 21st century skills, the compatibility of the preschool educational curriculum with 21st century skills are presented with the results of thematic content analysis.

21st Century Skills Acquirement Dimensions in the Preschool Educational Curriculum

The goals of the preschool education curriculum in acquiring 21st century skills were determined to have themes of preparing children for life, ensuring cognitive development, ensuring creativity and critical development, integrating development, acquiring basic skills and supporting social-emotional development fields. Table 2 gives the main theme, subthemes and codes related to the category of acquiring 21st century skills with the preschool education curriculum.

Table 2

Main Theme, Subthemes and Codes Related to the Category of Outcome 21st Century Skills with the Preschool Education Curriculum

Main Theme		Outcome 21st Century Skills
Codes	Subthemes	Example Statements
K ₁	Preparing for life	'Preparing children for life' 'In the nature of preparing for later periods'

Table 2
Continued

Codes	Subthemes	Example Statements
K ₂	Ensuring cognitive development	‘Preparing the child to understand and interrogate their thinking’ ‘Individuals, whether child or adult, firstly should be encouraged to think’ ‘The basis of acquiring skills is first thinking, then making others think’
K ₃	Creativity and critical development	‘Increasing children’s creativity’ ‘Critical thinking in children’
K ₄	Integrating development	‘Preparing the child for life in all developmental fields’ ‘Not teaching things, encouraging the individual to learn’
K ₅	Acquiring basic skills	‘Acquiring 21 st century skills’ ‘Targets the child learning by doing and experiencing’
K ₆	Social-emotional development	‘Basic skills ensuring socialization of the child’ ‘The role of the teacher is to encourage them to find the answer by making the child curious’

The preschool education curriculum provides a compatible framework with the requirements of a modern education understanding in early childhood education in the social-emotional and creative development dimensions. The curriculum simultaneously supports the cognitive, social-emotional, linguistic and psychomotor development fields in children. The research findings show the preschool education curriculum offers a multidimensional approach in terms of acquiring 21st century skills. The curriculum has an integrated early childhood educational model supporting not just cognitive development but also social-emotional and creative development. For 21st century skills, skills like problem solving, critical thinking and creativity, especially, are about gaining innovative skills and life skills, which are the basic elements of the modern educational understanding. Cognitive skills like problem solving and critical thinking, creativity and innovative production capacity, social-emotional development and socialization skills are compatible with acquisition at an early age in the profile of a 21st century individual required by the time in which the children live.

From the reflections of the field experts, along with the applicability of the curriculum and impact in acquiring skills, the focus of the curriculum on social-emotional development and acquiring basic skills offers a strong framework in terms of acquiring 21st century skills during early childhood education, while digital literacy and technology skills especially are acquired on a limited scale.

21st Century Skills Acquisition Competencies for the Preschool Educational Curriculum Outcomes and Indicators

The outcomes and indicators included in the preschool educational curriculum were determined to have two main themes of adequacy and inadequacy in acquiring 21st century skills.

When the adequacy theme is investigated in the results of the research, the curriculum appears adequate in terms of forming the basis for the child's future life, ensuring cognitive development, critical and creative thinking, acquiring basic skills and ensuring social-emotional development. For the inadequacy main theme, the inadequacies of the curriculum include outcomes and indicators of 21st century skills not being reached, not acquiring skills for every acquirement, and not acquiring skills in the psychomotor and self-care development fields. Table 3 presents the main themes, subthemes and codes related to the curriculum outcomes and indicators of the preschool educational curriculum in the acquiring 21st century skills category.

Table 3

Main Themes, Subthemes and Codes Related to the Curriculum Outcomes and Indicators of the Preschool Educational Curriculum in the Acquiring 21st Century Skills Category

Main Theme Adequacy		
Codes	Subthemes	Example Statements
K ₄	Basic skills	'Comprises the basis of skills'
K ₅	Critical and creative thinking	'Child's creativity, socialization'
K ₆	Cognitive development	'Skills like cooperation, communication'
K ₇	Social-emotional development	'Ensures the child's critical thinking'
Main Theme Inadequacy		
Codes	Subthemes	Example Statements
K ₁	Not achieving the goal	'I don't think the skills are acquired'
K ₂	Not appropriate for outcomes	'The skills for every acquirement are not acquired'
K ₄	Inadequate in ensuring cognitive development	'Very inadequate in ensuring psychomotor and self-care development'
K ₅	Inadequacy of outcomes	'Different outcomes may be added'

The preschool educational curriculum forms an appropriate basis for the learning profile required in the 21st century by providing opportunities to build creativity, socialization, cooperation and communication skills in children at an early age. Supporting the social interaction and communication skills in the early childhood period through education may strengthen the academic and social adjustment processes of children in this period. The research findings revealed that the curriculum provides the opportunity to configure upper-level thinking skills in children through activities and outcomes supporting the development of critical and creative thinking skills in children. It may ensure acquirement of skills at the center of the contemporary learning approach like problem solving, critical and creative thinking at an early age.

Among life-long learning skill competencies in the social-emotional development field, from the research findings it was identified that the curriculum supported empathy, cooperation, managing feelings and social adjustment skills in children. In this context, the curriculum offers a consistent and strong construct about developing 21st century skills in early childhood education with an integrated structure supporting social-emotional learning.

While the preschool educational curriculum offers important outcomes formally supporting 21st century skills, inadequacies in some fields were reflected by the majority of participants. They stated the curriculum was inadequate in acquiring skills targeted in the outcomes, and that the curriculum did not encompass 21st century skills in all learning fields in an integrated way. The research findings revealed an emphasis on inadequacies related to psychomotor and self-care development, and that though the curriculum was strong in the cognitive and social-emotional fields, it did not offer a balanced structure for all development fields. Self-care skills are basic components of life skills and the deficiencies in this context reveal the inadequacy of the curriculum in acquiring the life skills required in the 21st century.

The research findings show the need to increase diversity in the existing outcomes and that while the curriculum is adequate formally, there are inadequacies at implementation level. In this context, this shows there is a need to update the curriculum in terms of strong aspects and to revise the structure of the outcomes in terms of content, scope and depth.

Functionality of the Preschool Educational Curriculum in Outcome 21st Century Skills

For the functionality of the preschool educational curriculum in acquiring 21st century skills, the themes of addition of critical thinking and logic activities, organization suitable for the age of the child, ensuring the child's development from the foundations, adding different thinking documents, additions that will develop creativity, organization according to the child's interests, adding experiments and open-air activities and compatibility of activities developing imagination with the learning environment and preparation linked to flexibility, skills and outcomes. Table 4 includes the functionality of the preschool educational curriculum for acquiring 21st century skills.

Table 4

Main Themes, Subthemes and Codes Related to The Functionality of the Preschool Educational Curriculum for Outcome 21st century skills

Main Theme Learning environments		
Codes	Subthemes	Example Statements
K ₁	Learning environment	'To be able to organize in a way that will ensure critical thinking and logical thinking'
K ₂	Skill-based approach	'Every teacher prepares their plans according to the status of their own class'
K ₃	Child-centeredness	'Set up in a way appropriate for age and that will ensure cultivation from the foundations'
K ₄	Flexibility and adaptability	'Chosen from among skills supporting 21st century skills'
K ₅	Extracurricular activities	'Determines the teacher's adequacy or inadequacy'
K ₆	Creative environment	'May include different materials that will ensure the children think'

In the research findings, to be able to effectively implement the preschool educational curriculum, it was revealed to have a structure shaped according to the learning environment. The findings of the research reflected that the preschool educational curriculum was founded on compatibility and flexibility of the learning environment allowing the opportunity for skill-based preparation of teachers' plans based on the sociocultural features of the class, development level of the children and in line with learning needs, and the process of appropriately planning the curriculum's skill-based structure with 21st century skills.

The preschool educational curriculum adopts an approach allowing the opportunity to be constructed according to the developmental features and sociocultural context of the student group. The need for the curriculum to have a skill-based structure, for children to acquire basic skills appropriate for their age and to consciously select competencies like communication, creativity, cooperation and problem solving supporting 21st century skills was revealed.

One of the basic principles of the curriculum of centering the child requires materials that will encourage children to think, activities that will support creativity, and offer appropriate learning environments suitable for the child's individual features. The structure of the curriculum ensuring flexibility and compatibility strengthens the children's discovery behavior by continuously updating and differentiating the learning process according to the child's interests and renewing the learning environment.

The child-centered principle indicates that learning targets should be determined in accordance with the developmental features of the child. The integrated approach of the preschool educational curriculum, encompassing developmental fields in a balanced way, allows the opportunity to formally deal with the child's physical, social-emotional, cognitive and linguistic development fields in a way that will support each other.

The curriculum may carry the learning process outside the classroom by including non-curriculum activities developing the children's creativity, activities completed outdoors, experiments and games using building-construction materials. In this context, the multidimensional development targeted by preschool education may occur by ensuring the use of creative learning environments and supporting with activities enriching the children's imaginations.

Professional Values of Preschool Teachers in Acquiring 21st Century Skills

The research findings show that the applicability of the preschool educational curriculum in acquiring 21st century skills is largely linked to the professional competence of the preschool teacher, acting as implementor of the curriculum. In this context, within the scope of the research, the professional values of the preschool teachers were revealed, emerging at the forefront in the process of implementing the curriculum. For the professional values of preschool teachers, the themes of the child acquiring basic skills, guiding parents and students through effective communication, being a researcher, cooperation with stakeholders, updating knowledge and preparing students for the future emerged.

Table 5

Main Themes, Subthemes and Codes Related to the Professional Values of Preschool Teachers in Outcome 21st Century Skills

Main Theme		Professional Values That Teachers Should Possess
Codes	Subthemes	Example Statements
K ₁	Possession of professional skills	‘Receiving education about skills and how a child acquires these skills’ ‘The teacher must continuously renew themselves to adopt skills’
K ₂	Skill development methods	‘Skills are directly transferred from teacher to student in a systematic way’ ‘It is necessary to know and apply what skills are and how they are used’
K ₃	Effective communication skills	‘For skill acquirement, children and parents should be informed about this topic’ ‘Supporting the child in fulfilling their duties’ ‘Teachers should have effective communication knowledge and skills’
K ₄	Preparation for future life	‘Information should not be presented; it should be ensured that the child finds it’ ‘The child should be led to research’
K ₅	Updating professional knowledge	‘Inclusion of how skills will develop in the future in applied education curricula in universities’ ‘Organization of applied trainings in undergraduate education’
K ₆	Collaboration with stakeholders	‘Working in cooperation with parents about acquiring skills, informing about this topic’ ‘Should work in coordination with stakeholders about family skill outcomes’ ‘It should be explained to parents what they can do to encourage thinking’

Table 5 gives the professional values of preschool teachers in order to acquire 21st century skills with the preschool educational curriculum. On the basis of the professional knowledge and skills of teachers, the results of the research matched the ability of the children to acquire 21st century skills with the professional values of preschool teachers. The results of the research show that the children’s acquirement of 21st century skills is directly related to the professional knowledge and skills of teachers and these skills gain meaning in practice by matching with the professional values of the teachers.

Effective communication skills, among the professional values of preschool teachers, was one of the most important components of this process. Teachers having effective communication skills may strengthen the development of the student and family participation by providing

effective communication with stakeholders and families. Cooperation of the teacher with stakeholders is mandatory for the success of the skill acquisition process in children. Teachers should work in coordination with families, should explain the skill acquisition process and should include parents in this process. Preparation for the future, among professional values of preschool teachers, may contribute to the development of critical thinking and problem-solving skills through learning by doing-experiencing by directing the student toward research and discovery instead of directly offering information. A duty of teachers is to prepare the student for real life and later educational institutions. Among professional values of teachers, updating knowledge represents the continuous professional development of teachers. As a result, the development of students may be best completed by teachers who update their pedagogic and professional skills through preservice and in-service training. To be able to acquire the skills of the future, in other words 21st century skills, it is important that teachers update their knowledge in this context.

The results obtained based on expert interviews with the qualitative method and the results of the analysis of the compatibility with 21st century skills of the outcomes and indicators in the cognitive, linguistic, social-emotional and self-care fields based on document investigation of the preschool educational curriculum are given in the following tables. Table 6 shows the compatibility of the outcomes and indicators in the cognitive field with 21st century skills.

Table 6

The Suitability of Cognitive Domain Outcomes and Indicators to 21st-Century Skills

Cognitive Domain	MoNE 21st-Century Skills							
Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
			✓					
Outcome 2. Makes predictions about objects / situations / events.			✓					
Outcome 13. Recognizes symbols used in daily life.								✓
Outcome 17. Establishes cause-effect relationships.		✓	✓					
Outcome 19. Produces solutions to problem situations.		✓	✓					

Table 6

Continued

Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
Outcome 21. Recognizes Atatürk and explains his importance for Turkish society				✓				

When the preschool educational curriculum is investigated, there are 22 outcomes in the cognitive field. Several of these are inadequate in acquiring 21st century skills; however, when the outcomes are investigated in detail, only several form the basis of these skills and appear to prepare the child for life. Table 7 shows the suitability of the outcomes and indicators in the linguistic field with 21st century skills.

Table 7

The Alignment of Language Domain Learning Outcomes and Indicators with 21st-Century Skills

Language Domain	MoNE 21st-Century Skills							
Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
Outcome 4. Uses grammatical structures while speaking						✓		
Outcome 5. Uses language for communication purposes.					✓	✓		
Outcome 8. Expresses what he/she listens to or watches in various ways.	✓							

Table 7*Continued*

Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
Reads visual materials.								✓
Outcome 11. Demonstrates reading awareness.								✓
Outcome 12. Demonstrates writing awareness.								✓

When the preschool educational curriculum is investigated, there are 12 outcomes in the linguistic field. When outcomes in the linguistic field are investigated, outcomes are not at adequate level to acquire 21st century skills like critical thinking, problem solving, cooperation, digital/media literacy etc. Contrary to this, the linguistic outcomes provide basic infrastructure. Table 8 shows the compatibility of the outcomes and indicators in the social-emotional field with 21st century skills.

Table 8*The Alignment of Social-Emotional Domain Learning Outcomes and Indicators with 21st-Century Skills*

Social-Emotional Domain	MoNE 21st-Century Skills							
Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
Outcome 3. Expresses himself/herself in creative ways	✓				✓			
Outcome 4. Explains others' feelings regarding an event or situation					✓			

Table 8

Continued

Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Information Literacy
Outcome 5. Expresses positive and negative feelings appropriately regarding an event or situation	✓				✓			
Outcome 6. Protects his/her own rights and the rights of others				✓				
Outcome 7. Motivates himself/herself to accomplish a task or duty			✓					
Outcome 9. Explains different cultural characteristics				✓				
Outcome 17. Resolves problems with others	✓	✓	✓					

When the preschool educational curriculum is investigated, there are 17 outcomes in the social-emotional field. When the outcomes in the social-emotional field are investigated, the outcomes are adequate at limited level in acquiring the 21st century skills of critical thinking, problem solving, cooperation and media literacy. They support skills like basic communication, cooperation, empathy and self-regulation; however, contemporary skills like critical thinking, creativity, problem solving, digital competency, global citizenship and media literacy are deficient and not directly targeted. Table 9 shows the suitability of outcomes and indicators in the self-care skills field with 21st century skills.

Table 9*The Suitability of Outcomes and Indicators in the Self-Care Skills Field with 21st Century Skills*

Self-Care Skills Field	MoNE 21st-Century Skills							
Learning Outcomes and Indicators	Creative Thinking	Critical Thinking	Problem Solving and Decision Making	Local and Global Citizenship Awareness	Communication Skills	Using Turkish Correctly	Teamwork Skills	Life Skills
Outcome 3 Makes necessary arrangements in living spaces.								✓
Outcome 6. Uses the necessary tools and materials for daily life skills.	✓							✓
Outcome 7. Protects oneself from dangers and accidents.								✓

When the preschool educational curriculum is investigated, there are 8 outcomes in the self-care skills field. When the outcomes in the self-care skills field are investigated, they contribute to the child acquiring basic life skills like personal responsibility, self-regulation and independence. The outcomes are behavior focused and do not have the quality of directly providing contemporary 21st century skills like critical thinking, creative problem solving, digital literacy, media awareness and global citizenship. As a result, though the curriculum offers a basic infrastructure in the self-care field, it is inadequate in terms of 21st century skills.

Discussion

Our aim was to determine the reflections in the opinions of field experts about the compatibility of the preschool educational curriculum in Türkiye with 21st century skills. In this research, it was identified that the 21st century skills in the preschool educational curriculum were insufficient in meeting the educational needs of students in the early childhood period. The results of the research identified that the linking of 21st century skills practices with implementation of the preschool educational curriculum was positively reflected in the knowledge, skills and attitudes of students in the early childhood period.

Firstly, the outcomes related to 21st century skills in the preschool educational curriculum were connected with children being prepared for life, cognitive development, creativity and critical thinking, integrated development and basic skills, and with social-emotional developmental areas.

The preschool educational curriculum offers an approach supporting children's acquisition of 21st century skills in the early childhood period. The curriculum supports cognitive development, in addition to adopting integrated early childhood education supporting social-emotional and creativity development (Demir, 2020). The curriculum, involving an approach about gaining skills, contributed to developing the basic skills among 21st century skills of critical thinking, problem solving, communication and cooperation, due to its acquisition-based structure (Tuğluk & Özkan, 2019; Çetin & Çetin, 2021). The social-emotional development dimensions of the curriculum form the foundations of life skills at an early age by directing the development of the children's social interaction, empathy and cooperation skills (UNESCO, 2017; Denham & Brown, 2010).

Research in the literature in recent years identified that cognitive and creativity skills can be supported along with social-emotional skills in the early childhood period. A learning curriculum developed with a digital story by Metin, Kalyenci and Başaran (2025) identified that the children's coding and cognitive thinking skills were enhanced within the scope of 21st century skills. Digital game-based learning was revealed by Yıldız, Alkan and Tezer (2025) to increase computational thinking skills in the early childhood period. This result shows that if the 2013 curriculum was supported by digital and game-based activities, its importance for cognitive development would increase. In the context of Türkiye, preschool project-based experimental science practices were shown to significantly increase the children's problem-solving skills, which may be associated with the implementation of cognitive and scientific process skills included in the 2013 curriculum (Güley & Keskinliç, 2024).

Research by Tutkun and Eskidemir-Meral (2025) identified that development of social skills in early childhood contributed to the general adjustment of children through teacher-child relationships and academic self-perception. This result reveals that the social-emotional development goals of the preschool educational curriculum are important in terms of the long-term school success and psychosocial adjustment of children. Research by Elçi and Şahin (2025) identified significant correlations between 21st century skills in preschool children in the Turkish context with social behavior styles. This result shows that the curriculum may contribute to development of both individual and social skills.

Secondly, the adequacy of the acquisition and marker activities in monthly and daily plans in the preschool educational curriculum in acquiring 21st century skills was examined. Topics like the flexible structure in preparing the child for future life, cognitive development, critical and creative thinking and acquiring basic skills, preparation linked to outcomes and being suitable for the child were determined to be adequate. Inadequacy of the 2013 curriculum was associated with not acquiring skills for each acquirement when providing social-emotional development, and deficiencies in acquisition of skills in the psychomotor and self-care developmental fields.

In a flexible, comfortable and creative learning atmosphere, the 2013 curriculum may contribute to skill-focused development. Research by Ananiadou and Claro (2009) identified that a learning environment appropriately organized for skill transfer ensured development of students. The flexible and adaptable structure of the curriculum allows the opportunity for application to different school environments and age groups. In practice, organizing the learning environment according to local conditions may provide the basis for creating an inclusive educational environment.

Research by Keçi-Saylı and Kardeş (2024) identified that the use of digital material in preschool period education may serve to concretize abstract concepts, increase the children's interest and attention, and ensure meaningful learning processes and permanence. This result may

be linked to the potential of the preschool educational curriculum to integrate digital tools and materials in a conscious and planned way, which will increase acquisition of 21st century skills. Contrary to the results of the research, research by Papantonis Stajcic & Nilsson (2024) evaluating the planning and diversity of pedagogic decisions of preschool teachers when using digital tools in science education found that the personal pedagogic content knowledge of teachers and judgements about when and how to use digital tools were determinant about whether digital materials would be used for content or as a tool. Some teachers used digital tools to concretize abstract concepts, increase interest and increase participation by children, while some teachers were identified to choose traditional games, nature and face-to-face activities. The results of this research reveal that there is no consistency and prevalence for the use of digital tools in preschool education. The literature shows that within the framework of 21st century skills, the curriculum provides limited degree of acquisition of digital literacy and technology skills.

In conclusion, the outcomes and marker-based structure, flexible planning possibilities and integrated development goals of the preschool educational curriculum offer a potential opportunity to develop cognitive, creative and basic skills; however, to be able to reach this potential, it appears variables like digital pedagogy, material richness and quality of implementation play critical roles.

Thirdly, the support of the outcomes and indicators of the preschool educational curriculum for 21st century skills is connected with enrichment by adding activities developing critical thinking and logic, organizing activities appropriate for the development level of children, supporting basic development areas and with documents encouraging different thinking paths. Adaptation of the learning environments with practices increasing creative activities flexibly updated according to the child's interest, discovery activities like experiments and open-air studies, and activities feeding the imagination strengthen the quality of the curriculum in acquiring 21st century skills.

Research by Trilling and Fadel (2009) and Edwards (2017) identified that the inclusion of critical thinking, logic, problem solving and creativity-based activities in learning processes at an early age strengthen the cognitive flexibility and creative thinking skills of children. Construction of the curriculum from a developmental perspective, child-centered learning environments, organization in a way that is flexible and interest-centered, and enrichment with materials supporting different thinking paths is consistent with effective preschool educational approaches recommended in the international literature by NAEYC (2020). Idrizović and Dedić Bukvić (2026) determined that 21st-century skills are not independent of one another but rather mutually supportive; thus, instructional activities aimed at developing one skill can also contribute to the development of others. For this reason, it has been emphasized that skills such as critical thinking, creativity, communication, and collaboration should not be addressed individually or in isolation, but rather through an integrated pedagogical approach.

Studies by Pellegrini and Gustafson (2020) and Fjørtoft (2004) identified that experiment-based discovery processes, outdoor activities and nature-based learning environments had positive effects on children's 21st century skills like creativity, cooperation and problem solving.

Fourthly, acquisition of 21st century skills with the preschool educational curriculum is connected with the professional values of preschool teachers. The results of the research found the professional values of preschool teachers come to the forefront for children to acquire basic skills, in guiding parents and students with effective communication, adopting a research-based educational understanding, cooperation with stakeholders, updating knowledge and preparing students for the future. Teachers having these skills may contribute to cultivating students in a more effective way and becoming individuals suitable for the needs of the 21st century. These results

encourage efforts about developing these skills in teachers and educational curricula and emphasize the importance of innovative approaches in the educational field. In acquiring 21st century skills, it is a notable result that the functionality of the preschool educational curriculum is associated with the competency of the teacher, in the position of implementing the curriculum.

In this research, rather than the theoretical structure of the curriculum, the pedagogic adequacy of the implementing teacher emerged as the determinative element in children effectively acquiring 21st century skills. In research by Güven and Azkeskin (2020) and OECD (2019) it was identified that the knowledge and implementation levels related to 21st century skills of teachers directly affected the quality of the learning environments and the development of child outputs. Addai-Mununkum and Setordzi (2023) argue that curriculum reforms increasingly seek to equip learners with the competencies required to navigate a rapidly changing world, including 21st-century skills. Studies examining curriculum change have likewise emphasized the importance of teachers' experiences in understanding how these skills are reflected in and enacted through educational programs.

Research by Benner and Hatch (2010), Ljubetic (2012), Sumantri et al. (2021) in the literature connected the professional values of preschool teachers with children being trained and equipped with 21st century skills currently due to rapidly changing social needs, children's changing interests and needs, along with the continuous variation in the curricula. According to Palmer (2015), the professional values of teachers in the 21st century can be classified as creating a student-centered class and providing teaching specific to the person, seeing students each as producers, actively using technology that rapidly accesses and spreads information, being cooperative, being innovative, continuing life-long learning and project-based learning. In the results of the research, to be able to acquire 21st century skills, the professional values of preschool teachers were revealed to overlap with Palmer's classification.

Effective communication skills, one of the professional values of preschool teachers, is one of the most important values in the process of children acquiring skills. Sheridan, Williams and Sandberg (2020), Voogt and Roblin (2012) stated that effective acquisition of 21st century skills in preschool period education was closely associated with the pedagogic content knowledge, skills in in-class decision making and professional values of teachers. Research by OECD (2019) identified that the communication skills of teachers, attitudes to cooperation and motivation for continuous professional development played critical roles in supporting the development of upper-level thinking skills in the early childhood period.

Preschool teachers were stated to directly support children's learning motivation, students' learning motivation, social-emotional development and family participation with effective communication skills according to Pianta (1999). Teachers should inform children and parents about the process and should support students in fulfilling their tasks (Marzano, 2003; Epstein, 2018). Research by Otero-Mayer (2025) identified that open, respectful and trust-based school-family communication increased family monitoring of children's development, support for learning at home and desire to participate in decision processes. Graham and Clay (2024) reflected that the effective communication skills of teachers played a determinative role in family frequency of participation in school and children's learning motivation through the use of accessible language, regular feedback, sensitivity to the cultural context of families and cooperation-based effective strategies. Cooperation between teacher, family and school has a determinative effect on the students' motivation, self-regulation skills and academic performance, and it appears that skill development occurs more rapidly in learning environments with high family participation (Epstein,

2018; Hattie, 2023; Hornby & Lafaele, 2011). In this context, implementation of professional communication by teachers strengthens family satisfaction and sustainable cooperation.

Currently, practices preparing students for the future encourage the adoption of learning models prioritizing more research, interrogation and discovery rather than knowledge transfer. The findings indicate that pedagogical practices in early childhood education play a significant role in preparing students for their future professional careers (Shahini, 2025). Research in the literature revealed that 21st century skills develop in learning environments that are student centered, problem based, cooperative and supported by technology (OECD, 2023; Schleicher, 2020). Regular support of teachers for digital pedagogy, innovative practices in the classroom and teaching design based on learning data were shown to significantly increase student success (Guskey, 2021; Timperley et al., 2022). Ljubetic (2012) and Sumantri et al. (2021) placed preschool teachers as guides for children with the aim of supporting 21st century skills and not just academic knowledge.

There is broad consensus in the international literature regarding the importance of fostering 21st century skills in early childhood education. It is widely recognized that fostering critical thinking, problem-solving, creativity, communication, collaboration, digital literacy, and social-emotional skills from an early age can contribute to children's cognitive, social, and emotional development (Trilling & Fadel, 2009; Voogt & Roblin, 2012; OECD, 2019). However, differing perspectives exist regarding how these skills should be incorporated into early childhood curricula. While some studies advocate for explicitly incorporating such skills into curricula as learning outcomes, others suggest that 21st century skills should be embedded within developmentally appropriate learning processes such as play, exploration, project-based learning, problem-solving, and social interaction rather than taught as separate or discrete areas of learning (NAEYC, 2020; Edwards, 2017).

A similar debate concerns the integration of digital skills. Although digital tools can support children's learning when used for appropriate pedagogical purposes, the literature also emphasizes the potential limitations of technology use when it is not developmentally appropriate or when technological tools overshadow teachers' pedagogical decision-making (Keçi-Saylı & Kardeş, 2024; Papantonis Stajcic & Nilsson, 2024). Accordingly, while the international literature broadly recognizes the importance of 21st century skills in early childhood education, it does not reflect a full consensus regarding the specific content, pedagogical approaches, and learning environments through which these skills should be incorporated into early childhood curricula.

Implications and Conclusions

The results of the research revealed consistency between both semi-structured interviews and document analysis results. The MoNE preschool educational curriculum offers a strong foundation in terms of acquiring 21st century skills, but requires the addition of activities about integration of digital and technology-focused skills especially, with measurability of outcomes in practice. Though the curriculum provides a compatible framework for the requirements of the social-emotional and creative development dimensions and the modern educational understanding in early childhood education, results obtained based on expert opinions with the qualitative method and results of the investigation of documentation about the MoNE 2013 preschool educational curriculum did not identify adequacy for compatibility with 21st century skills as a result of analysis of outcomes and indicators in the cognitive, linguistic, social-emotional and self-care fields.

In conclusion, the success of acquisition of 21st century skills in MoNE preschool educational curriculum appears to be based on the professional values of teachers to a large degree. Based on detections in research in the literature, increasing teacher-student-family cooperation, using innovative teaching applications and adopting communication strategies sensitive in cultural terms make it possible to acquire 21st century skills from an early age. As a result, functionality of the curriculum is closely associated with the professional competency and values of the implementing teacher. Preschool teachers with strong professional values offer significant contributions to enriching children's learning experiences in the present day and the cultivation of individuals with an appropriate learning profile for the future.

Author Contribution

Kevser Özel: Planning the research, data collection, investigation resources, writing & original draft, data analysis, visualization, sources, logical analysis, formal analysis, conceptualization, writing & review and editing. **Nermin Karabacak:** Planning the research, supervision, writing & review and editing, continuity, research, conceptualization, project administration, review & editing.

Institutional Ethics Board Statement

The research protocol was reviewed and approved by the Institutional Ethics Board (IRB Approval No. 2023/102).

Informed Consent Form

The experts who contributed data for this study participated on a voluntary basis. They can be contacted by emailing the corresponding author (Nermin Karabacak, nermin.karabacak@erdogan.edu.tr).

Data Availability Statement

Due to the nature and characteristics of the evaluation data collected for this thesis, the scale and interview data are not publicly available. However, several deliverables (i.e., reports, presentations) were produced to summarize these data and the key evaluation findings. These products are available by email request to the corresponding author (Nermin Karabacak, nermin.karabacak@erdogan.edu.tr).

Funding

This study was not supported

Conflicts of Interest

We have no conflicts of interest to disclose.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Reference

- Addai-Mununkum, R., & Setordzi, S. (2023). Implementing curriculum change in Ghana: Exploring teachers' experiences with enacting 21st century pedagogies. *American Journal of Qualitative Research*, 7(4), 119-139. <https://doi.org/10.29333/ajqr/13660>
- Akpınar, Ü., & Kandır, A. (2022). Investigation of preschool teachers' views on outdoor play activities. *Pegem Journal of Education and Instruction*, 12(2), 235-245. <https://doi.org/10.47750/pegegog.12.02.23> pegegog.net
- Akyol, N. A., & Aşkar, N. (2022). Erken çocukluk döneminde 21. yüzyıl becerileri [21st century skills in early childhood]. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi* [Journal of Gazi Faculty of Education (JoGEF)], 42(3), 2597-2629.
- Ananiadou, K., & Claro, M. (2009). *21st century skills and competences for new millennium learners in OECD*. OECD.
- Aşkar, P., & Altun, A. (2023). *K-12 beceriler çerçevesi: Türkiye bütüncül modeli üzerine bir çalışma* [K-12 Skills Framework: A Study on the Türkiye Integrated Model]. *Millî Eğitim Dergisi* [National Education], 52(1), 925-940. <https://doi.org/10.37669/milliegitim.1308740>
- Battelle for Kids. (2023). *P21 early learning framework: A guide to 21st century skills in early childhood*. <https://www.battelleforkids.org/resources/p21-early-learning-framework/>
- Benner, S. M., & Hatch, J. A. (2010). From the editors: Preparing early childhood educators for 21st century children. *Journal of Early Childhood Teacher Education*, 31(2), 103-105.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). *Defining twenty-first century skills*. In P. Griffin, B. McGaw, & E. Care (Eds.), *Assessment and teaching of 21st century skills* (pp. 17-66). Springer.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Bredenkamp, S. (2017). *Effective practices in early childhood education: Building a foundation* (5th ed.). Pearson.
- Bulut, İ. (2022). Okul öncesi öğretmen adaylarının 21. yüzyıl becerilerinin bir yordayıcısı olarak yaratıcı düşünme eğilimleri [Creative thinking dispositions of preschool teacher candidates as a predictor of 21st century skills]. *Euroasia Journal of Social Sciences & Humanities*, 9(29), 50-74.
- Bobrowicz, K. (2024). Precursors of 21st century skills are malleable in early childhood but may have little impact on lifetime success. *Learning and Individual Differences*, 116, 102569.
- Care, E., Kim, H., Vista, A., & Anderson, K. (2018). *Education system alignment for 21st century skills: Focus on assessment*. Center for Universal Education at Brookings.
- Care, E., Griffin, P., & Wilson, M. (2022). *Assessment and teaching of 21st century skills: Research and applications*. Springer. <https://doi.org/10.1007/978-3-030-99688-8>

- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). Routledge.
- Creswell, J. W. (2015). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Pearson Education Inc.
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, 39(3), 124-130.
- Çetinkaya, S. & Tabak, S. (2019). Öğretmen adaylarının eğitim curriculumı okuryazarlık yeterlilikleri [Curriculum literacy efficiency of preservice teachers]. *Samsun Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi* [Ondokuz Mayıs University Journal of Education Faculty], 38(1), 296-309. <https://doi.org/10.7822/omuefd.535482>
- Çetin, M., & Çetin, G. (2021). 21. yüzyıl becerileri açısından MEB okul öncesi eğitim curriculumına eleştirel bir bakış [Curriculum literacy efficiency of preservice teachers]. *Yaşadıkça Eğitim* [Journal of Education for Life], 35(1), 235-255. <https://doi.org/10.33308/26674874.2021351258>
- Demir, A. (2020). Toplumsal cinsiyet algısı ve kariyer kararsızlığı: Sinop Örneği [The effect of women's perception of social gender on career indecision]. *Avrasya Uluslararası Araştırmalar Dergisi* [International Journal of Eurasian Research], 8(22), 1-17.
- Denham, S. A., & Brown, C. (2010). Plays nice with others: Social-emotional learning and academic success. *Early Education and Development*, 21(5), 652-680. <https://doi.org/10.1080/10409289.2010.497450>
- Dinler, H., Simsar, A., & Yalçın, V. (2021). 3-6 yaş çocuklarının 21. yüzyıl becerilerinin bazı değişkenler açısından incelenmesi [Examining 21st century skills of 3-6 years old children in terms of some variables]. *e-Kafkas Journal of Educational Research*, 8(2), 281-303. <https://doi.org/10.30900/kafkasegt.941467>
- Edwards, S. (2017). Play-based learning and intentional teaching: International perspectives. *Journal of Early Childhood Research*, 15(3), 275-288.
- Elçi, S., & Şahin, S. (2025). Okul öncesi dönem çocuklarının 21. yüzyıl becerileri ve rekabet stilleri arasındaki incelemesi [Examining the relationship between 21st century skills and competition styles of preschool children]. *İnönü Üniversitesi Eğitim Fakültesi Dergisi* [Inönü University Journal of the Faculty of Education], 26(2), 797-845. <https://doi.org/10.17679/inuefd.1598754>
- Epstein, J. L. (2018). *School, family, and community partnerships: Preparing educators and improving schools* (2nd ed.). Routledge.
- Erdoğan, G., & Bayraktar, V. (2026). Türkiye Yüzyılı Maarif Modeli okul öncesi eğitim programı öğrenme çıktıları ile 2024 erken çocukluk eğitimi programının kazanım ve göstergelerinin 21. yüzyıl becerilerine yer verme durumu açısından karşılaştırılması [Comparison of the learning outcomes of the Türkiye Century Maarif Model preschool education program and the achievements and indicators of the 2024 early childhood education program in terms of including 21st century skills]. *Anadolu Kültürel Araştırmalar Dergisi*, 10(1), 123-143. <https://doi.org/10.63556/ankad.v10i1.344>
- Fjortoft, I. (2004). Landscape as playscape: The effects of natural environments on children's play and motor development. *Children, Youth and Environments*, 14(2), 21-44.
- Geisinger, K. F. (2016). 21st century skills: What are they and how do we assess them? *Applied Measurement in Education*, 29(4), 245-249. <https://doi.org/10.1080/08957347.2016.1209207>
- Graham-Clay, S. (2024). *Communicating with parents 2.0: Strategies for teachers*. ERIC.

- Guskey, T. R. (2021). *Professional development: Research, practice, and guidelines*. Corwin.
- Güley, B., & Keskinli, A. (2024). The effect of project approach-based science education program on problem-solving skills of preschool children. *Humanities and Social Sciences Communications*, 11, 940.
- Güven, G., & Dere, F. (2025). Türkiye Yüzyılı Maarif Modeli 2024 okul öncesi eğitim programı'nda değerler ve alan becerileri arasındaki ilişkinin analizi [Analysis of the relationship between values and field skills in the century of Türkiye education model 2024 preschool education program]. *Milli Eğitim Dergisi*, 54(1), 1471-1500. <https://doi.org/10.37669/milliegitim.1705437>
- Güven, Y., & Azkeskin, K. E. (2020). Okul öncesi öğretmenlerinin 21. yüzyıl becerilerine ilişkin görüşleri [Preschool teachers' perspectives on 21st century skills]. *Erken Çocukluk Çalışmaları Dergisi* [Journal of Early Childhood Studies], 4(2), 251-271.
- Hattie, J. (2023). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Hornby, G., & Lafaele, R. (2011). Barriers to parental involvement in education. *Educational Review*, 63(1), 37-52. <https://doi.org/10.1080/00131911.2010.488049>
- Idrizović, D., & Dedić Bukvić, E. (2026). 4Cs Model in Initial Teacher Education: Fostering and Developing 4Cs Competencies in Higher Education Teaching. *Journal of Ethnic and Cultural Studies*, 13(3), 339-362. <https://doi.org/10.66815/ejecs/2725>
- Kadırgan, Z., & Şat, M. (2025). A review of studies on the Türkiye Century Maarif Model. *Temel Eğitim*, 7(27), 84-105. <https://izlik.org/JA58BR76BM>
- Kalaycı, N. & Bayrakçı, Z. (2025). Okul öncesi eğitim curriculumlarının karşılaştırılmalı analizi ve değerlendirilmesi (2013-2024) [Comparative analysis and evaluation of preschool education curricula (2013-2024)]. *The Journal Turkish Educational Sciences*, 23(1), 698-727. <https://doi.org/10.37217/tebd.1568266>
- Karaca-Atik, A., & Smeets, G. (2024). Mapping the landscape: A scoping review of 21st century skills. *Educational Research Review*.
- Keçi-Saylı, S. & Kardeş, S. (2024). Okul Öncesi Öğrenme Ortamlarında Dijital Materyaller ve Kullanımı [Digital materials and their use in preschool learning environments]. *Journal of Preschool and Elementary Education*, 5(2), 132-147 <https://doi.org/10.29329/jpee.2024.1168.4>
- Lincoln, Y. S., & Guba, E. G. (1995). Competing paradigms in qualitative research. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117), Sage Publications, Inc.
- Ljubetic, M. (2012). New competences for the pre-school teacher: A successful response to the challenges of the 21st century. *World Journal of Education*, 2(1), 82-90.
- Marshall, C., & Rossman, G. B. (2016). *Designing qualitative research* (6th ed.). SAGE Publications.
- Millî Eğitim Bakanlığı. [MoNE]. (2018). Okul öncesi eğitim programı. Ankara: MEB Yayınları. [Ministry of National Education Preschool Education Curriculum. Ankara: MoNE Publications].
- MoNE (2013). *Okul öncesi eğitim programı* [Ministry of National Education (MoNE). Preschool Education Curriculum. Ankara: MoNE Publications]. MEB Yayınları.
- MoNE (2024). *Türkiye Yüzyılı Maarif Eğitim Modeli Çerçeve Curriculumu* (2024). [Turkey Century Education Maarif Model Framework Curriculum]. [Ministry of National Education (MoNE)]. MEB.

- Marzano, R. J. (2003). *What works in schools: Translating research into action*. ASCD.
- Metin, Ş., Kalyenci, D., Başaran, M. et al., (2025). Design-based digital story curriculum: enhancing coding and computational thinking skills in early childhood education. *Early Childhood Education*, 53, 2255-2274 (2025). <https://doi.org/10.1007/s10643-024-01728-3>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). SAGE Publications.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications.
- NAEYC. (2020). *Developmentally appropriate practice*. National Association for the Education of Young Children.
- Iosifidis, T. (2003). *Qualitative research in social science and public policy: Theoretical and methodological issues*. Palgrave Macmillan.
- OECD. (2009). *21st century skills and competences for new millennium learners in OECD countries*. OECD Publishing. <https://doi.org/10.1787/218525261154>
- OECD. (2018). *The future of education and skills: Education 2030*. OECD Publishing.
- OECD. (2019). *OECD learning compass 2030*. OECD Publishing.
- OECD. (2023). *Skills for a changing world: Early childhood education insights*. OECD Publishing.
- Otero-Mayer, A. (2025). *Family involvement in early childhood education*. Early Childhood Research (metaanalysis).
- Palmer, T. (2015). *15 Characteristics of a 21st-century teacher*. <https://www.edutopia.org/discussion/15-characteristics-21st-century-teacher>
- Papantonis Stajcic, M., Nilsson, P. (2024). Teachers' considerations for a digitalised learning context of preschool science. *Res Sci Educ* 54, 499-521. <https://doi.org/10.1007/s11165-023-10150-5>
- Pellegrini, A. D., & Gustafson, K. (2020). Outdoor play and children's cognitive development. *Early Childhood Education Journal*, 48(1), 45-54.
- Schleicher, A. (2020). *Schooling for tomorrow: Education in 2030*. OECD Publishing.
- Shahini, G. (2025). The role of pedagogical practice duration in developing pre-service teacher competencies. *Journal of Curriculum Studies Research*, 7(2), 73-90. <https://doi.org/10.46303/jcsr.2025.12>
- Sheridan, S., Williams, P., & Sandberg, A. (2011). *Preschool teaching in Sweden-A profession in change*. *Educational Research*, 53(4), 415-437. <https://doi.org/10.1080/00131881.2011.625153>
- Silva, E. (2020). Measuring skills for 21st-century learning. *Phi Delta Kappan*, 101(8), 50-54.
- Sumantri, M. S., Dhieni, N., & Karnadi, K. (2021). Early Childhood Educators' Attitude toward STEAM and Online Learning as 21-st Century Skills. *Indonesian Journal of Early Childhood Education Studies*, 10(2), 128-135.
- Tuğluk, M. N., & Özkan, B. (2019). MEB 2013 okul öncesi eğitim curriculumının 21. yüzyıl becerileri açısından analizi [Analysis of MoNE 2013 preschool education curriculum in terms of 21st century skills]. *Temel Eğitim Dergisi* [Journal of Primary Education], 1(4), 29-38.
- Timperley, H., Ell, F., Le Fevre, D., & Twyford, K. (2022). *Leading professional learning: Practical strategies for impact in schools*. ACER Press.

- Tsiolis, G. (2018). Biographical constructions and transformations: Using biographical methods for studying transcultural identities. *Qualitative Research*, 18(1), 27-44. <https://doi.org/10.1177/1468794117694214>
- Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.
- Tutkun, C., & Eskidemir-Meral, S. (2025). Preschool children's social skills, problem behaviors, academic self-esteem and teacher-child relationship: A serial mediation model. *Frontiers in Psychology*, 16, 1453193. <https://doi.org/10.3389/fpsyg.2025.1453193>
- UNESCO. (2017). *Education for sustainable development: Learning objectives*. UNESCO Publishing.
- Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. *Journal of Curriculum Studies*, 44(3), 299-321, <https://doi.org/10.1080/00220272.2012.668938>
- Yıldız, E. P., Alkan, A., & Tezer, M. (2025). Enhancing early childhood students' computational thinking competency through digital game-based learning. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 13(2), 365-378. <https://doi.org/10.23947/2334-8496-2025-13-2-365-378>

Notes on Contributors

Kevser Özel is a graduate of the faculty of special education, department of preschool teacher Training. She has been working as a preschool teacher in rural areas for twelve years. Working in rural areas is her personal choice to contribute to the preschool education of children living in rural areas. The author continues to work as a preschool teacher in rural areas as an education specialist. She is also involved in projects aimed at integrating children living in rural areas into preschool education. kevserozel868@gmail.com

Nermin Karabacak is a Senior Lecturer in the Department of Educational Sciences, Faculty of Education, Rize Recep Tayyip Erdoğan University. She continues her research on educational programs, teacher training, professional values of teaching and teacher qualifications, international students, cultural inclusivity studies, and the education of immigrant and refugee children. There is project studies related to cultural inclusivity studies. nermin.karabacak@erdogan.edu.tr

ORCID

Kevser Özel, <https://orcid.org/0009-0007-1928-6087>

Nermin Karabacak, <https://orcid.org/0000-0001-5231-1730>