Journal of
Engineering Sciences
Faculty of Engineering
Assiut University
JES
مجلة
العلوم الهندسية
كلية الهندسة
جامعة أسيوط
journal homepage: http://jesaun.journals.ekb.eg

Preschool Education Spaces: Interior Design Suggestions within the Framework of the Maarif Education Model-Space Relationship

Received 5 August 2025; Revised 16 November 2025; Accepted 16 November 2025

Hatice ÇINAR[1]

Keywords
Preschool education facilities, Maarif Model, Interior design, Spatial perception parameters

Abstract: Preschool education settings, where children take their first steps in the education and socialization process after parental education, are critically important for their physical, mental, and social development. During this period, learning becomes permanent, and interaction with the environment intensifies. In this context, school settings are considered educational elements supporting learning. The study examines the impact of the educational model and legal regulations applied during the child's development process on interior design, using the example of Konya Meram Mevlâna Kindergarten. The aim is to evaluate the effects of the child–Maarif Education Model–space relationship in preschool education structures. The hypothesis is that the Maarif Model is important in meeting children's psychological and educational needs through spatial perception parameters. A mixed research method was adopted in the study; qualitative data obtained through semi-structured interviews in the first phase were evaluated through content analysis, and in the second phase, design recommendations were developed using simulation and architectural visualization tools based on these findings. As a result, original, functional, and aesthetically qualified children's learning environments were designed.

1. Introduction

The changing lifestyles and habits on a global scale have also led to fundamental transformations in the field of education. In line with the importance of 21st-century skills and collaboration-based approaches, school environments are expected to support socialization [1], [2]. While traditional educational spaces limit this process with their individualistic and competitive structures, today's design approach emphasizes productivity, interaction, and flexibility. Well-organized and functionally equipped spaces have become important components that encourage socialization [3]. Such spaces also facilitate children's adaptation to school and the development of positive perceptions [4]- [6].

Preschool education is a critical period for the healthy development of individuals [4]. During this process, children are equipped with prosocial skills such as life skills, empathy, creativity, and self-

[1] Interior Architecture, Faculty of Architecture and Design, Selcuk University, Konya, Turkey. haticecinar@selcuk.edu.tr

https://doi.org/ 10.21608/jesaun.2025.411053.1657

esteem. In developing these skills, the teacher's guidance plays a decisive role, as does the spatial environment that supports education [7], [8]. When all these parameters are evaluated, the education system and understanding of space have expanded, and the perceptual impact of environmental factors on child development has become even more important [9]. During development, children constantly interact with their environment and perceive and interpret it through their senses. However, this development is mainly dependent on environmental conditions. Therefore, the design of spaces that meet children's needs, support their holistic development, and appeal to visual perception is of critical importance. Especially in preschool education environments, visual perception should be one of the fundamental determinants of design [10].

The literature emphasizes that learning environments are a helpful teaching tool in a child's education. In this context, spaces that are comprehensive from pedagogical, functional, and aesthetic perspectives and that support discovery and learning should be designed [11], [2]. Such environments should stimulate children's curiosity and encourage them to explore, experiment, and discover their abilities [12], [13]. Every space design element—color, shape, material, and function—affects children's perception and can guide their behavior [14], [15]. The age range of 0–6 years is when children's sensory development is at its fastest [16]. The materials, colors, and textures used during this period directly affect perception. Preschool structures should be evaluated not only in terms of functionality but also from an aesthetic perspective [17]. Research shows that children aged 3–6 perceive objects first by color and then by shape [18]-[20]. Spaces that stimulate the senses combine learning with fun while supporting the development and socialization of children with sensory limitations [21].

Children's behavior is influenced by environmental factors such as color, light, and texture used in indoor spaces. Studies show that the orientation and external environment of educational buildings significantly influence daylight penetration and occupant comfort, reinforcing the argument that spatial and lighting design are critical in early childhood settings [42]. Children, who are more active and open to exploration than adults, try to understand their surroundings by touching them; this shows that the sense of touch is as important as vision in spatial perception [22]. Educational spaces should be evaluated based on multidimensional criteria such as aesthetics, pedagogical principles, and sensory interaction [23]. Early childhood is also critical for gaining nature awareness [24], [25]. Research indicates that early childhood education and care settings incorporating urban green spaces enable richer pedagogical practices and nature-based learning experiences, which supports the present study’s emphasis on outdoor learning centres [43]. Therefore, outdoor space arrangements are as influential as indoor spaces in preschool buildings [26]. Landscape design can incorporate natural elements and play-worthy components to create nature-based educational environments, contributing to children's environmental awareness [13].

According to the literature, socialization with innovative educational approaches is related to the curriculum and spatial design. Unidirectional and limited physical environments do not support socialization [27]. It has been stated that inadequate and inflexible spaces cause stress in children [28], challenge teachers [29], and reduce quality [30]. Studies conducted since the 2000s have shown that structures and equipment design appropriate for children's spatial perception contribute positively to their development [22]. The Maarif Education Model Preschool Education Program, published by the Ministry of National Education in 2024, defines school-based learning centers in detail. These centers allow children to freely gain experience, learn through play, and develop skills such as decision-making, creativity, and concentration. The centers, grouped under nine headings,

include block, book, early literacy, music, art, science, mathematics, dramatic play, and outdoor play centers [31].

The Maarif Model is a new approach recently implemented in Turkey, and its spatial outputs have not yet been sufficiently researched. The Maarif Model shares a similar philosophical foundation with early childhood education approaches such as Montessori, Reggio Emilia, Waldorf, and the Finnish model, all of which emphasize holistic child development. However, there are notable distinctions among these approaches. The Montessori approach emphasizes individual learning pace and freedom of choice [38], while the Reggio Emilia model prioritizes learning through social interaction and collaboration [39]. The Waldorf approach centers on art, rhythm, and connection with nature to support children's emotional and intuitive development [40]. The Finnish model stands out with its flexible curriculum, play-based learning, and inclusive spatial organization [41]. The Maarif Model, on the other hand, integrates moral values with academic learning, offering a culturally grounded, locally contextualized educational paradigm [31]. In this respect, the model, like international approaches, aims for the holistic development of the child while seeking to create a value-oriented learning environment through spatial design. Following the findings of [42] within an educational building context and [43] in early childhood outdoor settings, this study positions the Maarif Model's learning centres within spatial design frameworks that integrate light, material, nature, and interaction.

This study aims to contribute to literature by focusing on the intersection of architecture and education disciplines. In this context, the model was evaluated within the framework of spatial perception parameters; semi-structured interviews were conducted with educators at a selected kindergarten in the first phase of the research. The model's use of space was analyzed based on the qualitative data obtained, and design proposals were developed using simulation research methods and architectural visualization tools.

2. Methods and tools

A mixed-method research design was adopted by combining qualitative and simulation-based approaches. The structure of the proposed mixed-method framework is illustrated in Figure 1. The study primarily relies on qualitative data, which were obtained through semi-structured interviews and analyzed using content analysis. However, quantitative elements such as spatial simulation outputs, code frequencies, and graphical distributions were also employed at a descriptive level to support and visualize the qualitative findings. Therefore, the research was designed as a qualitatively oriented mixed-method study, in which numerical data serve a supportive and explanatory function rather than a full-scale statistical analysis.

2.1. Research Model

This study employed a mixed research method. In the first stage, qualitative interviews were conducted with the selected sample, and the Maarif Education Model was evaluated based on spatial perception parameters. Qualitative research is a process in which the researcher examines the problem in its natural environment and interprets the meanings of individuals [32]. According to Creswell, this method analyzes how participants evaluate the subject within its context [33]. The Maarif Model, a new application, focuses on an unexplored area in terms of spatial outputs. In the second phase, the simulation research method was employed. This method enables the replication and representation of real-world objects and environments [34]. Based on qualitative findings, model proposals were developed using architectural visualization tools.

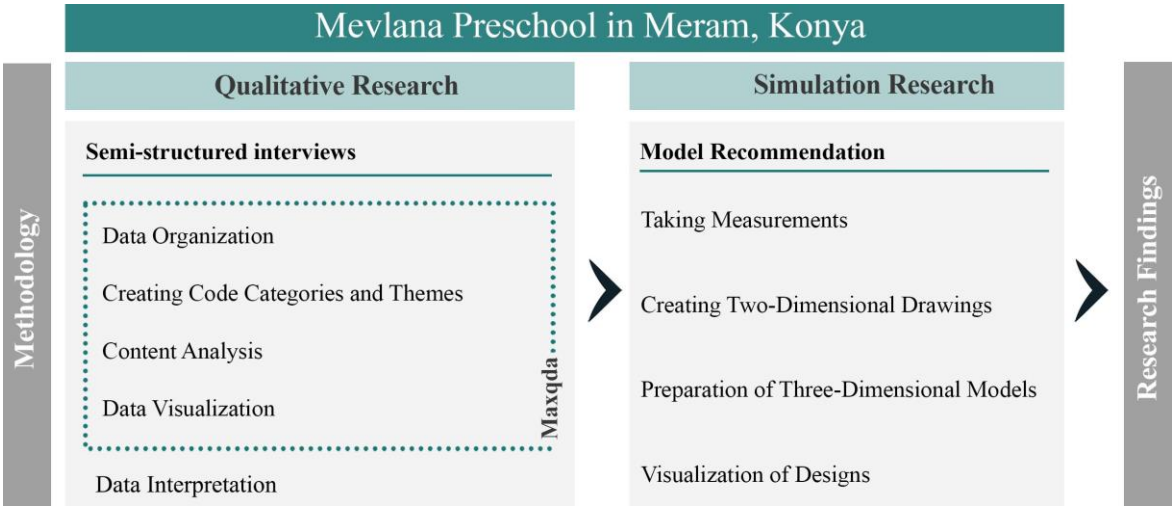


Fig. 1: Methodology.

2.2. Material and Sample

The setting for this study is Mevlana Kindergarten in Meram district, Konya province. The building has been serving different educational levels since 1957 and has been used as a kindergarten since 2007. Five classrooms and 10 student groups have a morning and afternoon shift system. There are 10 teachers, one guidance counselor, and one principal working in classrooms of 20 students. All teachers are female. In qualitative research, it is important to establish strong bonds with participants and understand the phenomenon in depth [33]. For this reason, 10 classroom teachers and one guidance counselor in direct contact with the students were selected to form the study group. Using purposeful sampling, semi-structured interviews were conducted with all teachers to ensure maximum diversity. This study deliberately focused on a single school to gain a deeper understanding of the spatial effects of the Maarif Model. Rather than aiming for generalization, the research emphasizes contextual understanding and qualitative insight. Therefore, although examining only one preschool limits generalizability, it allows for a more detailed interpretation of the model's spatial effects. In addition, due to ethical considerations, data were not collected directly from children; instead, the findings were indirectly obtained through teachers' observations. Teachers' experience and tenure at the institution were considered in the analysis and presented graphically (Figure 2).

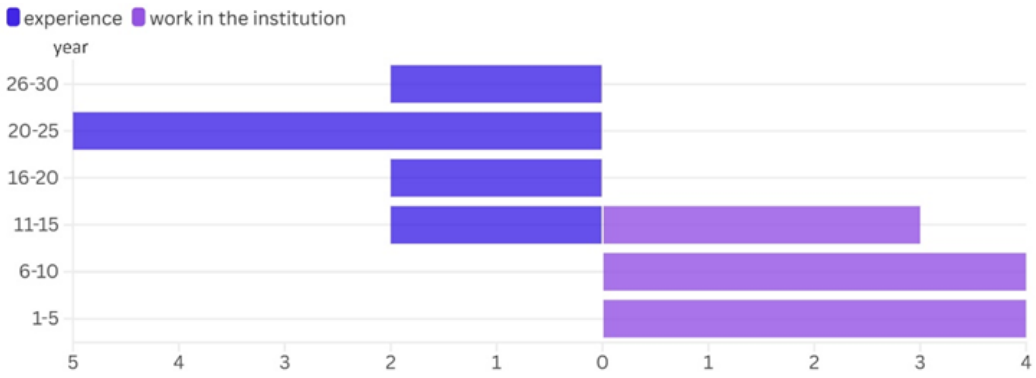


Fig. 2: Sample data.

2.3. Data Collection

In the qualitative part of the study, semi-structured interviews were conducted with the selected group of teachers. According to Merriam, interviews are necessary to understand individuals'

unobservable behaviors and how they interpret the world. Semi-structured interviews are important in terms of allowing participants to convey their perceptions in their own words [35], [36]. In this context, open-ended questions were prepared to reveal teachers' spatial perceptions of the Maarif Model. The questions were adapted from examples proven valid and reliable in similar studies in the literature. Interview approval was obtained from the Scientific Ethics Evaluation Board of the Faculty of Architecture and Design at Selçuk University on April 14, 2025, with decision number 05. Participants' consent forms were obtained, audio recordings were made, and the data were transcribed, coded as G1, G2, G3, and so on, and included in the analysis. This process is aimed at ensuring the validity and reliability of the research. In the second phase of the research, field observations were conducted within the simulation method's scope, the space's current state was determined, and survey drawings were prepared using AutoCAD. These data served as the foundation for three-dimensional designs.

2.4. Data Analysis

Qualitative research analyzes data using descriptive, content, and discourse analysis [37]. In this study, the content analysis method was preferred. Content analysis reveals the relationships between concepts using an inductive approach; themes, categories, and codes are systematically constructed [37], [36]. In this context, spatial perception parameters were determined as themes; sub-parameters were analyzed to lead to categories from codes. The data coding and analysis process was carried out using the Maxqda program. Maxqda was preferred because it facilitates the organization, visualization, and analysis of qualitative data [33]. Additionally, artificial intelligence-based tools such as DeepL and Grammarly were utilized for text language control. Based on the findings, interior design recommendations were developed using the simulation method. The designs were created based on the Maarif Model's fundamental principles and educators' opinions. The plans for Mevlana Kindergarten were modeled using 3ds Max, and the Corona render engine was used during the visualization phase.

3. Results

This section evaluates the findings obtained through the qualitative data collection process using content analysis methods and presents them systematically. In order to answer the research questions, themes, categories related to these themes, and codes were determined, and the data were organized into a meaningful structure. Spatial perception parameters formed the thematic framework, and categories and codes derived from teacher opinions were analyzed according to this framework. The findings were visualized using Maxqda software, and code-category-theme relationships were interpreted. Additionally, the proposed interior space models based on content analysis findings were supported by three-dimensional simulation designs. The findings are presented based on content analysis and simulation-based recommendations, respectively. The study yielded seven themes, 21 categories, 46 codes, and 329 frequency values. The themes, categories, codes, and frequencies of the interviews are presented in Table 1.

According to the table, the theme with the highest frequency is ‘texture/material’. This finding is consistent with the literature indicating that learning in early childhood predominantly occurs through tactile experiences. In second place is the ‘shape/form’ theme, which has a similar frequency and points to an important emphasis on ergonomics and anthropometry in children's spaces. The third theme is ‘measure/proportion’, and the close frequencies of the first three themes indicate a striking relationship. In addition, the themes ‘light/illumination’ and ‘color’ are also seen

to be related to each other with similar frequencies. These are followed by the themes 'direction/movement' and 'sound/acoustics. All themes in the table are discussed separately in their respective contexts below.

Table 1: Theme, category, code, and frequency table used in the study

Thema	Form	Light and lightening	Color	Tissue and material	Scale and proportion	Direction and movement	Sound and acoustics
Category	3	3	3	4	2	3	3
Code	7	5	7	9	6	6	6
Frequency	63	46	42	64	55	35	24

- The form theme, which includes analyses aimed at understanding how the physical layout of the space and children's perception of the space were shaped, is shown in Figure 3 in the hierarchical code-subcode model.

Fig. 3: Form theme hierarchical code-subcode model.

The form theme is not only evaluated in terms of spatial dimensions but also in terms of pedagogical and experiential effects. When examining the distribution of codes, it is observed that the physical structure of space manifests itself in different dimensions in terms of its behavioral effects on children. According to teachers' views, the fact that the code 'dimensions of space' has the highest frequency indicates that space size is of great importance in creating learning centers implemented within the educational model. For example, P1 states, "As the size of the space increases, a more comfortable environment is provided for children," P2 states, "Although larger classrooms provide more space for children to move around, this does not make control more difficult," P6 states, "... spaces that are spacious, airy, and well-lit are very beneficial for children's mental development," and P7 states, "The wider the space, the more comfortably children move and the greater their physical freedom," P8 'Spacious areas provide opportunities for dramatic play.' The second high frequency of the 'open spatial design' code emphasizes the pedagogical

importance of the relationship between the space and the external environment for children. From the participant interviews, P3, “Learning outdoors is much more effective,” P4, “Outdoors, children express their creativity with materials such as leaves and stones,” and P8, “Open and flexible spaces encourage children's imagination,” also emphasize that the outdoors supports children's creative development. The equal frequency of “flexible use” and “clear boundaries” indicates a balance between allowing children freedom of movement and freedom within the space.

- The theme of light/lighting, which addresses the effect of light on children's physical and psychological comfort in preschool space design, is shown in Figure 4 in a hierarchical code-subcode model.

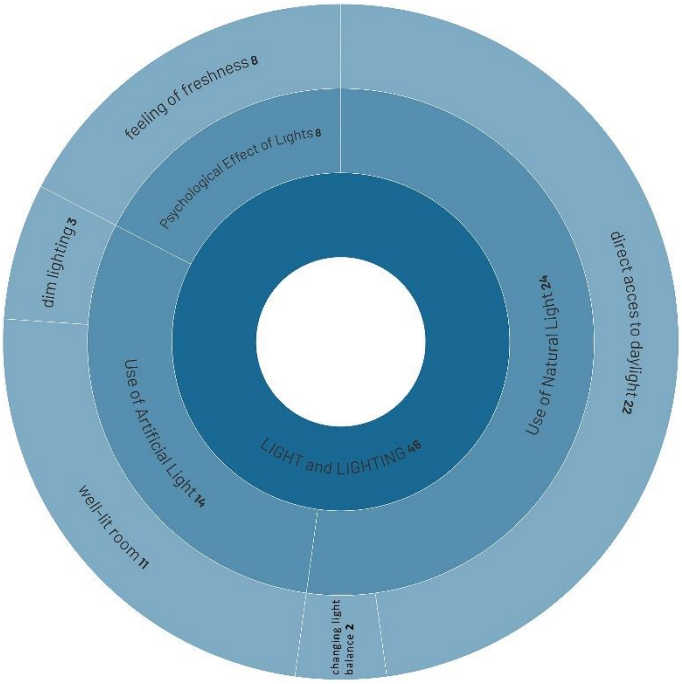


Fig. 4: Light/lighting theme hierarchical code-subcode model.

In this theme, teachers most frequently highlighted the code set “direct access to daylight.” This finding also supports the high frequency of the code “open spatial design” under the form theme. Furthermore, adding an “Open Air Learning Center” to the 2024 preschool education program model indicates that this decision has been implemented appropriately and positively. The psychological impact dimension shows that light is critical from a technical perspective and for children's mental and emotional health. Participants' comments, such as P5 'Daylight helps children start the day more energetically, facilitates their concentration, and positively affects their mood.', P8 'The use of natural light increases learning motivation...', and P9 'The use of natural light increases learning,' support the importance of natural light. Additionally, there is a meaningful hierarchy and distribution among the codes under the theme, which strengthens the analytical depth of the theme.

- The color theme, which examines the effects of color use in spatial perception and learning environments on children in terms of functional, psychological, and aesthetic dimensions, is shown in Figure 5 in a hierarchical code-subcode model.

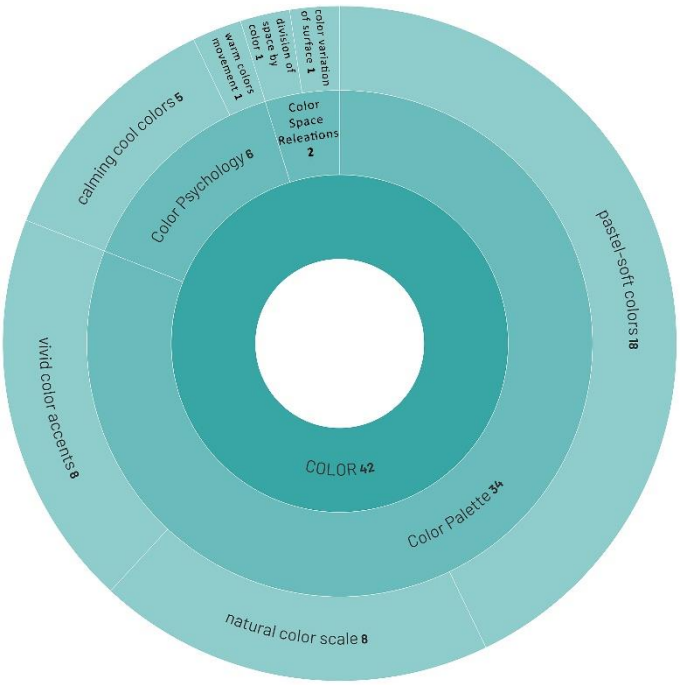


Fig. 5: Color theme hierarchical code-subcode model.

The most emphasized points in the color theme were pastel tones and natural colors. This reduces the visual load of the space, supporting the goal of maintaining children's attention span. Participants stated: P5 “Colors should not strain the eyes; pastel tones are preferable.” P8 “Soft and soothing colors facilitate concentration.” P9 'Colors should not be distracting but simple and calming.' P10 'Excessively vibrant and complex colors can cause anxiety in some children, while natural light and pastel tones provide psychological comfort.' These statements support the findings of this theme. The psychological effects of color have been identified.

- The tissue/material theme, which analyzes the effects of the types of materials used in preschool spaces, their textural properties, and their perceptual effects on children, is shown in Figure 6 in a hierarchical code-subcode model.

Fig. 6: Tissue/material theme hierarchical code-subcode model.

Natural materials and tactile experiences emerge as the strongest areas within the theme. The majority of participants answered the interview question “What are the most important elements to consider in space design?” with “safety,” pointing to the importance of the frequency value of the “sharp/soft surface material” code. The high-frequency value of the “natural material” code also establishes a strong connection with the “natural color scale” code in the color theme. This indicates a preference for healthy and warm materials that allow children to connect with nature. In addition, natural materials and soft-surfaced textures have been seen as safe and stimulating elements for increasing children's interaction with their environment. Participant P5 mentioned the importance of this code, stating, “Works made with natural materials such as wood, fabric, and cork increase children's sensory awareness and contribute to their mathematical thinking skills.” The qualitative characteristics of the material (lifespan, weight, character contribution) reflect the sustainability of the space, not only for children but also for the interior space itself. Although the emphasis of visual texture is low, it stands out as an eye-catching detail that is part of the aesthetic perception.

- Figure 7 in the hierarchical code-subcode model shows the scale and ratio theme, which measures children's relationship with space and their bodies and how it is shaped by proportion and perception in space.

Fig. 7: Scale and ratio theme hierarchical code-subcode model.

The codes “perception of height in space” and “proximity to human scale” are the strongest emphases of the theme. This shows the importance of children's experiences of safety and belonging in space. The “body-space relationship” defines the child's capacity for movement and experience in space. Again, in the theme of form/shape, 'spatial dimensions' and 'sense of height in space' are closely related to the functional approach in spatial design. In children's spaces, ergonomic and anthropometric accessibility for children as users are the most important design elements. This is emphasized by the 'eye-level elements' code, highlighting the importance of materials or fixtures positioned at a height suitable for children. In this regard, participants stated: P8 “Spaces that children can easily access and navigate increase their participation in learning.” P9 “Furniture appropriate for children's age and height in terms of size and proportion supports their self-confidence and creativity.” P1 “Because when a child touches a corner, the fact that that space is connected to reality supports their development.” P2 “Children should be able to easily access

materials and use them without assistance from the teacher." These views also support the importance of these codes. Less frequent but meaningful codes such as "sense of control" and "spatial hierarchy" should be considered guiding elements in pedagogical space design.

- The direction and movement theme, which analyzes children's responses to spatial cues and their ability to find their way around a space, is shown in Figure 8 in the hierarchical code-subcode model.

Fig. 8: Direction and movement theme hierarchical code-subcode model.

The theme of direction and movement is important in preschool space design to support children's freedom of movement and their ability to find their way around. The meaningful hierarchy and distribution of codes demonstrate that the theme has been explored in depth. The relationship between time and space is a valuable finding for children to maintain their routines in the "daily flow of time," establishing a connection with the space, and developing a sense of security. "Free controlled movement" stands out as an important finding in teachers' pedagogical approaches in terms of classroom control. Participant P8 emphasized the importance of this issue with the statement, "The free movement area strengthens children's movement, desire to explore, and social interaction." Although the participants focused more on physical guidance, "guidance through color and material" is also used as a guiding criterion in interior design.

- The sound and acoustics theme, which evaluates the effect of sound levels in preschool education facilities on children's perception, attention span, and acoustic comfort/control, is shown in Figure 9 in a hierarchical code-subcode model.

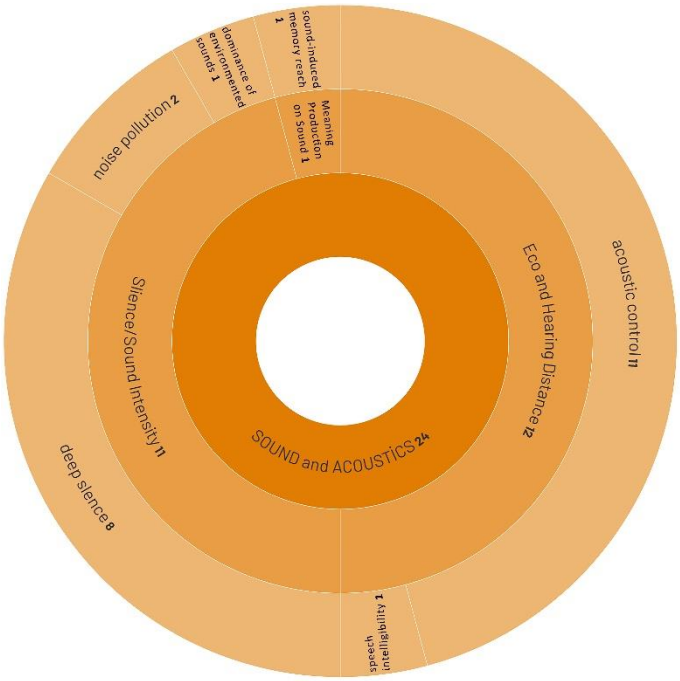


Fig. 9: Sound and acoustics theme hierarchical code-subcode model.

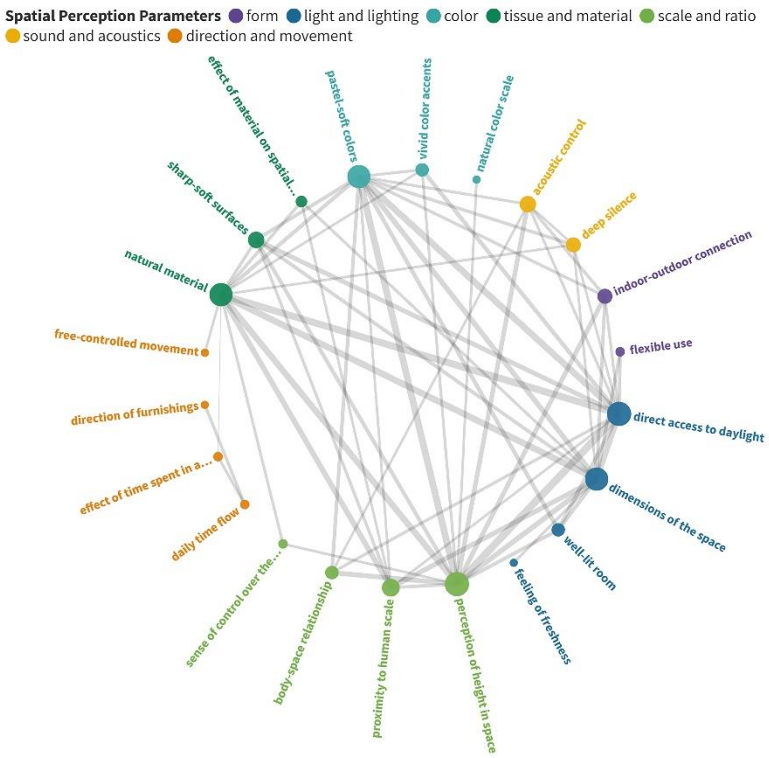


Fig. 10: Content analysis code co-occurrence (code proximity) model.

Participants evaluated the sound element in terms of both auditory comfort (acoustic control, silence) and attention management. In this theme, codes such as 'acoustic control' and 'deep silence' stood out. In contrast, low-frequency but pedagogically important codes such as 'sound memory revival' could offer creative suggestions for design. Participants' statements, such as P8 'A quieter acoustic environment supports concentration.' and P9 'A noise-free acoustic environment enhances the quality of learning.,' highlight the importance of acoustic control in learning. In summary, when the findings were evaluated, it was revealed that spatial perception parameters support children's

emotional and pedagogical learning in terms of functionality, psychology, and aesthetics in the design of preschool learning environments. Figure 10 presents the interrelated findings of all theme-categories and codes.

According to the code co-occurrence model, it is observed that the seven themes analyzed in the study establish overlapping, interactive, and complementary relationships through their multidimensional and multi-parameter codes. Among these, high-frequency codes such as ‘spatial dimensions, ‘spatial configuration open to the outside, ‘direct access to daylight, ‘pastel tones, ‘natural materials, ‘sharp/soft-surfaced materials, ‘natural color scale’, ‘daily time flow’ and ‘acoustic control’ emerge as significant criteria in spatial design. Low-frequency sub-themes, on the other hand, offer qualitative findings that should be considered in design decisions, as they are based on unique and functional interpretations. For instance, ‘elements such as spatial division through color, ‘color differentiation on surfaces’ and ‘visual texture’ are presented as notable details in the aesthetic approach to spatial design. Similarly, low-frequency yet meaningful codes such as ‘sense of control’ and ‘spatial hierarchy’ should be considered as guiding elements in pedagogical spatial design (Figure 10).

In conclusion, spatial perception parameters have been evaluated as important qualitative findings to consider in design decisions for preschool learning environments. In this context, each theme has been approached as a tool in spatial design and used as a guiding design tool in the design of the interior learning environment of the kindergarten. The current state of the Konya Meram Mevlâna Kindergarten, which was selected as the study material, was documented through on-site observations, measurements, drawings, and photographs, and the relevant visuals are presented in Figure 11.

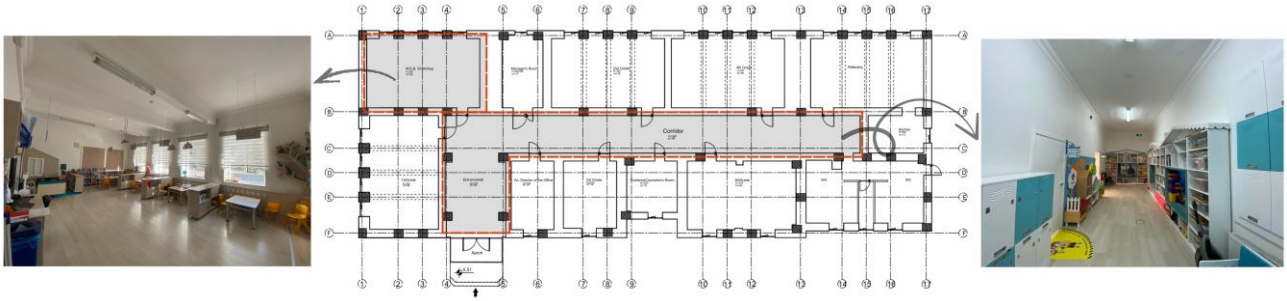


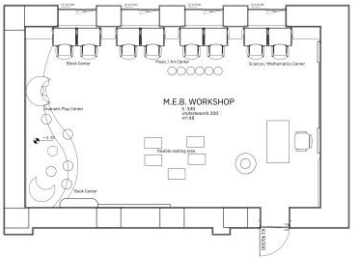
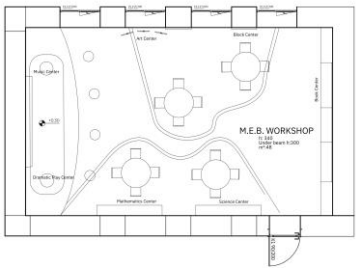
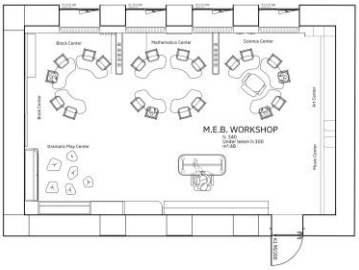
Fig. 11: Floor plan and photos of the interior of the classrooms and corridor at Konya Meram Mevlâna Kindergarten.

The interior design developed through simulation has been conceptualized in line with the “Learning Centers” defined in the Maarif Education Model Preschool Education Program published by the Ministry of National Education in 2024. According to the program, nine centers are recommended to be present in preschool institutions: block, book, early literacy, music, art, science, mathematics, dramatic play, and outdoor learning centers. Within the scope of this study, interior design proposals were developed for eight centers, while the outdoor learning center was evaluated in terms of its connection with the interior space. The designs were modeled in three dimensions using 3ds Max and visualized using the Corona Render engine. Visuals of three different spaces developed as examples are presented in Table 2.

In addition to the learning centers, the corridors, which form the internal circulation areas of the school, were also designed in accordance with the spatial principles of the Maarif Education Model. The corridor space was conceived as a dynamic transition area that supports children’s orientation, movement, and interaction skills. Within this scope, the 3D corridor model proposals developed for three different spaces are presented in Table 3.

The proposed interior designs were developed in line with the spatial perception parameters and scientific themes, resulting in original, functional, and aesthetically qualified learning environments for children. Since the Maarif Education Model is based on a value-oriented learning approach that emphasizes continuity and holistic experience, not only the learning centers but also the corridor areas were designed accordingly. The corridors were conceived as dynamic transition spaces that support children's orientation, movement, and interaction skills. At the same time, the learning environments were interpreted as interaction-oriented spaces that encourage socialization and collaboration. Through this approach, the study contributes to establishing a holistic spatial organization at the school scale within the framework of the Maarif Education Model.

Table 2: Interior design suggestions

	Plan	**Interior design view 1**	**Interior design view 2**
Sample 1			
Sample 2			
Sample 3			

4. Discussion/Conclusion

The preschool period, the most critical stage of education, is an important process in which children acquire multifaceted prosocial skills such as social relationships, problem-solving, empathy, self-awareness, and creative thinking. Changing lifestyles and educational approaches on a global scale have necessitated the restructuring of all educational processes, especially preschool education. In this context, the Maarif Education Model, developed by the Ministry of National Education in 2023 and implemented as of 2024, is a unique educational approach that integrates academic achievement with moral and value-based development. The spatial outputs of the model, however, point to an area that has not yet been sufficiently researched. In this respect, the study is located at the intersection of architecture and education disciplines and contributes to the literature.

Table 3. Corridor area model suggestions

	Corridor view 1	Corridor view 2	Corridor view 3
Sample 1			
Sample 2			
Sample 3			

Children's interaction with their environment is directly related to the process of understanding the world through their perceptions. For this reason, it is of great importance that educational spaces in the preschool period are designed to support the multidimensional development of children. In this context, the research questions the impact of the educational model and legal regulations applied in the development process of children on interior design. The study aims to evaluate the Maarif Education Model through spatial perception parameters. The hypothesis developed in line with the purpose of the research was tested using a two-stage mixed method; spatial perception themes were analyzed using an inductive approach through the Maxqda program. As a result, it was determined that these parameters offer meaningful qualities that should be considered in the design of preschool learning environments.

According to the findings, the form and proportion/scale themes are directly associated with the physical organization of the space in terms of its suitability to children's anthropometric dimensions, ease of orientation, and sense of spatial control. The light and color themes emerge as visual components that enhance children's spatial perception and directly influence their psychological and emotional states. In particular, the intensity of natural light in learning areas increases children's attention span and cognitive performance, while the proper design of artificial lighting reduces fatigue and distraction [15], [19]. The combined use of natural lighting and light color palettes strengthens the sense of openness and spaciousness and reinforces feelings of safety and concentration among children [21]. The texture and material theme complements these visual effects through a sensory dimension, creating a sense of safety, comfort, and familiarity on surfaces that children physically interact with. The use of natural and sustainable materials (such as wood, natural fiber textiles, and soft surfaces) enhances children's psychological relaxation and sense of belonging, thereby directly improving the pedagogical quality of the interior environment [22], [23]. The orientation and movement theme relates to the fluidity of space, the control of transitions, and wayfinding processes. When integrated with time–space relationships, this theme contributes to a rhythmic flow that supports children's daily routines. Finally, the sound and acoustic theme is considered a crucial factor that operates in the background of all other physical-spatial parameters

yet determines the overall quality of experience. High-frequency codes within these themes define functional design criteria, while low-frequency codes stand out as qualitative indicators that should be taken into account in abstract design decisions such as originality and aesthetics. When the literature and findings are evaluated together, it is seen that spatial perception parameters contribute to children's emotional and pedagogical development in preschool learning environments regarding their functional, psychological, and aesthetic dimensions. In this direction, each theme has been evaluated as a tool in the design process and used as a guiding component for kindergarten interiors. Spatial organization was established based on the learning centers defined in the Ministry of National Education's Maarif Education Model Preschool Education Program.

The spatial approach of the Maarif Education Model shares a similar philosophical foundation with international early childhood education models such as Montessori [38], Reggio Emilia [39], Waldorf [40], and the Finnish model [41], all of which are based on child-centered learning principles. These models view the learning environment not merely as a physical shell, but as an active component that supports children's cognitive, emotional, and social development. The Montessori approach emphasizes the individual learning pace and the educational value of the environment [38], while the Reggio Emilia model highlights creativity, participation, and exploration [39]. The Waldorf pedagogy nurtures intuitive and emotional growth through art, nature, and rhythm [40], and the Finnish model stands out with its flexible, play-based, and inclusive spatial settings [41]. The Maarif Model, while inspired by these universal pedagogical principles, places moral values at the core of the educational process, shaping a design and learning approach that reflects Turkey's unique cultural context. Following the findings of [42] within an educational building context and [43] in early childhood outdoor settings, this study positions the Maarif Model's learning centres within spatial design frameworks that integrate light, material, nature, and interaction. In this regard, the study presents a distinctive example of how a locally grounded model can intersect with international pedagogical perspectives, offering a valuable contribution to the global literature.

The spatial principles of the Maarif Education Model can be evaluated not only at the classroom or learning center scale but also within the overall spatial configuration of the school. As the model's value-based learning approach emphasizes continuity and holistic experience, the corridors were reinterpreted within this framework, while other spaces (such as shared and outdoor areas) can be further developed in future studies. In this way, the study contributes to the establishment of a holistic spatial configuration of preschool environments aligned with the Maarif Education Model.

As a result, the interior space proposals developed were designed as unique, functional, and aesthetically qualified learning environments in line with spatial perception parameters and scientific themes. The research reveals that these spaces contribute meaningfully to children's mental and cognitive development. In addition, design model proposals in line with the model have been developed, providing a comprehensive framework that can guide preschool education structures. In addition, future studies involving larger samples that include schools from different regions will enhance the generalizability of the findings and provide a more comprehensive perspective on how the spatial reflections of the Maarif Model take shape across diverse contexts. In addition, future studies may include teachers from different schools as well as administrators and parents to enhance participant diversity and strengthen the validity and comparability of the findings. In this context, the Maarif Education Model should be taken as a basis for preschool structures, and spatial perception parameters should be used as guiding tools in interior design. Furthermore, child-centered design awareness should be incorporated into architecture and interior

design education programs, and course content related to educational structures should be updated accordingly.

References

[1] D. Kaya and M. Gündüz, "Alternatif eğitim ve toplumsal değişim üzerindeki etkisi: Waldorf okulları örneği," Milli Eğitim Dergisi, vol. 45, no. 205, pp. 5–25, 2015.

[2] M. Yalçın, K. Yıldırım, and A. M. Bozdayı, "Developmental implications of children bedroom in the interior environment and implementations of adults preferences," Megaron, vol. 10, no. 3, pp. 305–316, 2015.

[3] R. Midilli Sarı and E. Aktürk, "Okul ve sosyalleşme ilişkisinde katalizör olarak donatı tasarımı," Milli Eğitim Dergisi, vol. 51, no. 235, pp. 2363–2396, 2022. doi: 10.37669/milliegitim.900874.

[4] A. Ayaydın, "Okul öncesi dönemde görsel sanatlar eğitiminin bireye kazandırdığı değerler," Erzincan Eğitim Fakültesi Dergisi, vol. 12, no. 1, pp. 187–200, 2010.

[5] Ö. S. Kaya and E. Akgün, "Okul öncesi dönemdeki çocukların okula uyum düzeylerinin çeşitli değişkenler açısından incelenmesi," Elementary Education Online, vol. 15, no. 4, pp. 1311–1324, 2016. doi: 10.17051/io.2016.51992.

[6] S. Koçyiğit, "Çocukların bakış açısıyla okul öncesi eğitim," Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, vol. 2, no. 36, pp. 203–214, 2014.

[7] E. Yalçıntaş Sezgin, "Okulöncesi dönemde yaşam becerileri," Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, vol. 5, no. 12, pp. 710–719, 2018.

[8] Ş. Geyik, Y. M. Çalışkan, and D. N. Bay, "Okul öncesi dönem çocuklarının okul algılarının belirlenmesi," Ihlara Eğitim Araştırmaları Dergisi, vol. 4, no. 1, pp. 1–17, 2019.

[9] A. Akçaova, "Teknik resim dersi uygulama yönteminin öğrenci performansına etkisi: Selçuk Üniversitesi İç Mimarlık Bölümü örneği," Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, no. 56, pp. 278–289, 2025. doi: 10.52642/susbed.1617600.

[10] A. Yörükoğlu, Çocuk Ruh Sağlığı. İstanbul: Özgür Yayınları, 2006.

[11] M. Karaoğlu Can and N. N. Çelebi Şeker, "Places of experience: Vitrahaus within the context of game-learning relationship," J. Archit. Sci. Appl., vol. 7, Special Issue, pp. 60–79, 2022. doi: 10.30785/mbud.1020186.

[12] İ. Aydemir and Ş. Yalçınkaya, "Yapay hareket alanlarında psiko-motor gelişime yönelik tasarım yaklaşımı," Çukurova Univ. J. Inst. Soc. Sci., vol. 32, no. 2, pp. 648–660, 2023.

[13] D. Çukur and E. Güller Delice, "Erken çocukluk döneminde görsel algı gelişimine uygun mekân tasarımı," Sosyal Politika Çalışmaları Dergisi, vol. 7, no. 24, pp. 25–36, 2011.

[14] İ. Soyupak and M. Eti Proto, "İç mekân tasarımının öğretici potansiyeli: Marmara Üniversitesi Prof. Dr. Ayla Oktay okul öncesi eğitim uygulama birimi örneği," Sanat Tasarım Dergisi, no. 9, pp. 7–19, 2018. doi: 10.17490/Sanat.2018.22.

[15] H. Bakal and D. Erten Bilgiç, "Eğitim yapıları iç mekân tasarımı ve bilişsel gelişim ilişkisi," Mimarlık ve Yaşam Dergisi, vol. 8, no. 1, pp. 113–131, 2023. doi: 10.26835/my.1191788.

[16] Y. Değirmenci, A. Bulut, and M. Kuzey, "Okul öncesi öğrencilerinin mekân algısı ve yön becerilerine yönelik öğretmen görüşlerinin incelenmesi," Bayburt Eğitim Fakültesi Dergisi, vol. 16, no. 31, pp. 21–38, 2021. doi: 10.35675/befdergi.069069.

[17] M. Baran, A. Yılmaz, and M. Yıldırım, "Okul öncesi eğitimin önemi ve okul öncesi eğitim yapılarındaki kullanıcı gereksinimleri: Diyarbakır Huzurevleri Anaokulu örneği," Dicle Univ. Ziya Gökalp Eğitim Fakültesi Dergisi, no. 8, pp. 27–44, 2007.

[18] O. Koleoso, B. Ehigie, and K. Akhigbe, "Colour preference among children in a Nigerian Montessori school," Mediterranean J. Social Sci., vol. 5, no. 1, pp. 325–332, 2014. doi: 10.5901/mjss.2014.v5n1p325.

[19] E. Helvacıoğlu and N. Olguntürk, "Colour contribution to children's wayfinding in school environments," Optics & Laser Technol., vol. 43, no. 2, pp. 410–419, 2011. doi: 10.1016/j.optlastec.2009.06.012.

[20] B. Öztürk and G. Tayılga, "Anaokulu iç mekân oyun alanlarına yönelik kavramsal yaklaşımlar: İç mimarlık tasarım stüdyosu deneyimi," Turkish Online J. Design Art Commun., vol. 11, no. 4, pp. 1226–1238, 2021. doi: 10.7456/11104100/002.

[21] S. A. Türk and R. Midilli Sarı, "Eğitim yapısı tasarımını duyular üzerinden (yeniden) düşünmek," Sanat ve Tasarım Dergisi, no. 26, pp. 719–750, 2020.

[22] S. Baksi and R. Köse Doğan, "Çocuk mekânlarında güncel tasarım yaklaşımları," Yakın Mimarlık Dergisi, vol. 2, no. 2, pp. 90–102, 2019.
[23] H. Li, "Research on educational space design for preschool children," J. Theory Pract. Soc. Sci., vol. 3, no. 11, pp. 19–27, 2023. doi: 10.53469/jtpss.2023.03(11).04.
[24] A. Benliay, B. Cüce, and O. Soydan, "Okul öncesi eğitim kurumlarında dış mekân peyzaj tasarımının 5–6 yaş çocuk grubu algısı üzerindeki etkisi," Niğde Univ. J. Eng. Sci., vol. 3, no. 1, pp. 37–47, 2014.
[25] N. Köşker, "Okulöncesi çocuklarında doğa algısı," Bolu Abant İzzet Baysal Univ. J. Fac. Educ., vol. 19, no. 1, pp. 294–308, 2019. doi: 10.17240/aibuefd.2019.19.43815-443217.
[26] A. Akay and A. T. Polat, "Peyzaj tasarım sürecinin toplu konut bahçelerinde uygulanması üzerine bir çalışma: Konya ili örneği," in Peyzaj Mimarlığında Bilimsel Yaklaşımlar, M. Zencirkıran and N. S. Akdeniz, Eds., Lyon: Livre de Lyon, 2023, pp. 69–91.
[27] R. Leiringer and P. Cardellino, "Schools for the twenty-first century: school design and educational transformation," Br. Educ. Res. J., vol. 37, no. 6, pp. 915–934, 2011. doi: 10.1080/01411926.2010.508512.
[28] S. Arslan Karaküçük, "Okul öncesi eğitim kurumlarında fiziksel/mekânsal koşulların incelenmesi: Sivas ili örneği," Cumhuriyet Univ. Fac. Arts Sci. J. Soc. Sci., vol. 32, no. 2, pp. 307–320, 2008.
[29] A. Turla, T. F. Şahin, and N. Avcı, "Okulöncesi öğretmenlerinin fiziksel şartlar, program, yöntem, teknik, sınıf ve davranış yöntemi sorunlarının bazı değişkenlere göre incelenmesi," Milli Eğitim Dergisi, no. 151, pp. 95–101, 2001.
[30] O. Kıldan, "Okul öncesi eğitim bağlamında; eğitim hizmetlerinde kalite," Süleyman Demirel Univ. J. Econ. Adm. Sci., vol. 15, no. 2, pp. 111–130, 2010.
[31] M.E.B., Okul Öncesi Eğitim Programı: Türkiye Yüzyılı Maarif Modeli, 2024. [Çevrimiçi]. Erişim adresi: https://tymm.meb.gov.tr/upload/program/2024programokuloncesiOnayli.pdf
[32] N. K. Denzin and Y. S. Lincoln, The SAGE Handbook of Qualitative Research, 5th ed. Thousand Oaks, CA: SAGE, 2018.
[33] J. W. Creswell, Nitel Araştırma Yöntemleri. Ankara: Siyasal Kitabevi, 2013.
[34] L. Groat and D. Wang, Architectural Research Methods, 2nd ed. Hoboken, NJ: John Wiley & Sons, 2013.
[35] S. B. Merriam, Nitel Araştırma: Desen ve Uygulama İçin Bir Rehber. Ankara: Nobel Akademi Yayıncılık, 2023.
[36] A. Yıldırım and H. Şimşek, Sosyal Bilimlerde Nitel Araştırma Yöntemleri. Ankara: Seçkin Yayıncılık, 2021.
[37] A. Baltacı, "Nitel araştırma süreci: Nitel bir araştırma nasıl yapılır?," Ahi Evran Univ. J. Soc. Sci. Inst., vol. 5, no. 2, pp. 368–388, 2019.
[38] A. S. Lillard, Montessori: The Science Behind the Genius, 3rd ed. New York, NY: Oxford University Press, 2017.
[39] C. Edwards, L. Gandini, and G. Forman, The Hundred Languages of Children: The Reggio Emilia Experience in Transformation, 3rd ed. Santa Barbara, CA: Praeger, 2012.
[40] M. Rawson and T. Richter, The Waldorf School Curriculum: Its Genesis, and the Central Importance of Imagination in Education. Hudson, NY: SteinerBooks, 2020.
[41] J. Salminen, "Early childhood education and care system in Finland," Nauki o Wychowaniu. Studia Interdyscyplinarne, vol. 5, no. 2, pp. 135–154, 2017.
[42] M. S. Mohammed, A. H. El-Zafarany, and A. A. M. Aly, "Impact of building surroundings on daylighting behavior inside educational building: A case study of Assiut University," J. Eng. Sci. Assiut Univ., vol. 50, no. 4, pp. 421–434, 2026. doi: 10.21608/jesaun.2026.XXXXX.
[43] C. Montalván-Castilla, "Urban green spaces in early childhood education and care: Implications for outdoor learning and environmental awareness," Early Child Dev. Care, vol. 194, no. 5, pp. 1021–1036, 2024. doi: 10.1080/1350293X.2024.2412782.