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Pedagogy-driven Design Fundamentals of 21st Century Primary Schools' Physical Learning Environments

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Abstract

Today, it is widely acknowledged that the quality of physical learning environments is directly related to the quality of education. Hence, the structure and characteristics of school buildings and physical learning environments are determined by the requirements of pedagogy. This study is considered to be important in terms of understanding pedagogical fundamentals that shape the physical learning environments of 21st-century primary schools. This study aims to provide a holistic perspective on the pedagogical foundations that guide the building design and physical learning environments of primary schools. The pedagogical foundations of primary school buildings were subsumed under two main categories, i.e. 'child-friendly design' and 'design for learning'. Appropriate designs of the physical learning environment concerning these pedagogical principles were spaces that are child-scale, interactive open, purposed as teaching tools, flexible, and community-connected. Some suggestions were introduced to rethink the physical learning environments of primary schools. Learning environments should be designed by social interaction and different learning objectives, in various sizes, and including common areas where the whole school community will come together. Schools' learning environments should be flexible to meet the expectations of developing pedagogy. Physical learning environments should take learning beyond classrooms and be functional. The open spaces of the schools should be interactive and host community-based events.

Keywords: School design, physical learning environment, pedagogy, 21st century skills

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21. Yüzyıl İlkokullarında Fiziksel Öğrenme Ortamlarının Pedagojiye Dayalı Tasarım Temelleri

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Öz

Günümüzde, fiziksel öğrenme ortamlarının kalitesinin doğrudan eğitimin kalitesiyle ilişkili olduğu yaygın biçimde kabul görmektedir. Bu nedenle, okul binalarının ve fiziksel öğrenme ortamlarının yapısı ve özellikleri, pedagojinin gereksinimlerine göre belirlenmektedir. Bu çalışmanın 21. yüzyıl ilkokullarının fiziksel öğrenme ortamlarını şekillendiren pedagojik temelleri anlamak açısından önemli olduğu düşünülmektedir. Bu çalışma, ilkokulların bina tasarımına ve fiziksel öğrenme ortamlarına rehberlik eden pedagojik temellere bütünsel bir bakış açısı getirmeyi amaçlamaktadır. İlkokul binalarının pedagojik temelleri, 'çocuk dostu tasarım' ve 'öğrenme için tasarım' ana kategorileri altında toplanmıştır. Bu pedagojik temellerle ilgili olarak fiziksel öğrenme ortamının uygun tasarımları; çocuk ölçeğinde alanlar, etkileşimli açık alanlar, öğretim araçları olarak amaçlanan, esnek ve toplumla bağlantılı alanlardır. İlkokulların fiziksel öğrenme ortamlarını yeniden düşünmek için bazı öneriler getirilmiştir. Öğrenme ortamları, sosyal etkileşim ve farklı öğrenme hedeflerine göre, çeşitli boyutlarda ve tüm okul topluluğunun bir araya geleceği ortak alanları içerecek biçimde tasarlanmalıdır. Okulların öğrenme ortamları, gelişen ve değişen pedagojinin beklentilerini karşılayacak biçimde, uyarlanabilir olmalıdır. Fiziksel öğrenme ortamları, öğrenmeyi sınıfların ötesine taşımalı ve işlevsel olmalıdır. Okulların açık alanları etkileşimli olmalı ve toplum temelli etkinliklere ev sahipliği yapmalıdır.

Anahtar Sözcükler: Okul tasarımı, fiziksel öğrenme ortamları, pedagoji, 21. yüzyıl becerileri

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Introduction

Classrooms with limited movement space in the form of boxes lined up on either side of the long, narrow, dark main hallway... In these classrooms, twenty or more students sit at their desks, lined up one behind the other... A school bell rings later the forty minutes of learning and teaching... Children young and old run down the stairs to the playground to use their allotted time for fun. The on-duty teacher waits in the garden to maintain control and order. The schoolyard welcomes the students with its cold concrete floor. Students play and run here. In the hidden places of the school, fights and bullying between students occur from time to time. There are no private areas in the school reserved for visitors. There is an irregular traffic flow inside the school. However, the national vision for education foresees the training of individuals with the skills needed in the information and technological age. Advanced pedagogical approaches are used in instructional programs.

This description illustrates teaching in a typical public school in Turkey in 2022, which may be familiar to educators in many parts of the world. Schools typically provide the infrastructure to support learning with the features of the physical environment. Yet, there can be a discrepancy between progressive pedagogical approaches and learning environments (Higgins, Hall, Wall, Woolner, & McCaughey, 2005). Primary schools are the first settings where children meet and socialize independently of their families (O'Donnell, 2012). Children's experiences of primary schools as enchanting places contribute to their positive attitudes toward school (Adıgüzel, 2012). Children experience school in four domains as "spatial, psychological, psycho-sociological, and behavioral" (Nair & Fielding, 2013, p.7). Therefore, the quality of schools in the 21st century is related to their ability to serve as spaces that meet the child's experiences in these areas. Restructuring schools as spaces that are attractive, safe, and suitable for children to learn, and making them accessible to all children, is one of the priority issues in education in the international arena.

While until the late 1970s only the basic standards (temperature, lighting, acoustics, ventilation, and others) of the school were addressed, later it began to be understood that the physical environment has various effects on student behavior (Weinstein, 1979). Thus, the term "learning environment" was used referring to various factors (visual, auditory, and kinesthetic) enhancing the physical aspects of human comprehension (Kopec, 2006). In the 1970s, the factory school model evolved into the open school model, which has its roots in Montessori education (Cole, 2011). Weinstein (1979) outlined that open space and open-plan schools have two different meanings. Accordingly, open space refers to meaningful and exploratory learning approaches. There are interest centers in the classrooms where students can work in groups. Open-plan schools refer to the building structure. Open-plan schools do not have interior walls. Because open-plan schools allow for flexible room layouts, they also have the potential to increase learning by improving teacher-student interaction and allowing for teamwork (Weinstein, 1979).

School architecture and physical learning environments did not change radically until the 2000s. In the 21st century, the relationship between learning environment characteristics and educational quality has been better understood (Craissati, Devi Banerjee, King, Lansdown, & Smith, 2007). As part of the expansion of the definition of learning with the knowledge economy, the 21st century learning framework highlighted to integrate with basic academic subjects. In this context, life and professional skills, knowledge, media and technology skills, and learning and renewal skills are among the most important goals of educational institutions (Çiftçi, Sağlam, & Yayla, 2021). Since the 2000s, the profile of an educated person has been redefined as a global citizen who effectively uses information and communication technologies and is responsible for his or her own learning (Fırat, 2021). Understanding the new human profile has led to rethinking the physical environments of educational institutions. In 2002, the OECD organized the International Seminar on Education Infrastructure, and many countries addressed various issues such as the integration of technology into the educational environment, sustainability, and safety (Mahony, Hextall, & Richardson, 2011). The UK Design Council has also addressed the need for learning environments to keep pace with the rapid changes in learning (UK Design Council, 2005). The widespread belief that traditional schools could not meet learning expectations and developments in their curricula, and that it was a futile attempt to incorporate new insights in pedagogy into old classes, provided the impetus for innovative initiatives in school architecture (De Gregori, 2011; Leiringer & Cardellino, 2011). The 21st Century Schools

(CABE/RIBA, 2004) and the Building Schools for the Future Program [BSFP] in England are good examples of these initiatives (Leiringer & Cardellino, 2011). Another initiative is the Priority School Building Program, which was launched in the UK in 2011 (Education & Skills Funding Agency, 2016). The international trend toward developing effective learning environments and designing innovative school structures has continued since the early 2000s (OECD, 2015).

The changing nature of education has profound implications for the characteristics of the physical learning environment. The 21st century learning environments include physical environments, digital learning environments, and social interaction environments (EDUSPACE21, 2016). The main goals of these learning environments are to develop cognitive (critical thinking, problem solving), interpersonal (cooperative working, intercultural skills), and internal skills (skills such as self-management, self-regulation) of 21st century learners (The American National Research Council [NRC], 2011). In addition, school buildings and classroom designs vary across countries, depending on educational attitudes and philosophies and financial resources (Woolner, 2010). Today's educational approaches aim to educate students to become individuals who explore and use knowledge effectively. One of the indicators of the quality of education is the physical facilities that enable students to acquire 21st century skills such as "collaboration, critical thinking, effective communication, and entrepreneurship" (Gökçe & Erdem, 2019, p.67). Leiringer and Cardellino (2011) suggest that the philosophy of education guides the design of physical learning spaces, but that there must be a balance between the realities of education and economy in designing school buildings. For example, if a school does not have enough flexible space to accommodate more students, some changes must be made in the teaching methods used.

Referring to the situation in Turkey, primary education is serving the largest student population. In the 2019-2020 academic year, there were a total of 24 thousand 790 primary schools, 5 million 279 thousand 945 students (Republic of Turkey Ministry of National Education, 2020a). The number of primary-school-age children is rapidly increasing in Turkey. In addition to meeting the school and classroom needs of children, there are extensive efforts to enhance the quality of learning environments. However, the budget deficiency allocated for the reconstruction of buildings is among the most fundamental problems of primary education (Sarıbaş & Babadağ, 2015; Deveci & Aykaç, 2019). This situation also affects students' academic achievement. Regarding this issue, according to the results of the Program for International Student Assessment [PISA] 2015, there is a linear relationship between the education budget allocated for education and student achievement in countries with an education expenditure of less than $50,000 per student in the 6-15 age group (OECD, 2018). Increasing the budget allocated for the infrastructure of schools in developing countries such as Turkey and reorganizing the 21st century physical learning environments are key factors that enhance student learning. In this context, student-oriented, technologically enriched and individualized learning environments are needed for the acquisition of 21st century skills, and thus, library, workshops, laboratories and active learning classes where students can activate their self-learning, 4C (cooperative, communicative, critical and creative) thinking skills (Çiftçi, Sağlam, & Yayla, 2021).

Current Trends in Physical Learning Environments of Primary Schools in Turkey

In line with international trends, numerous studies have been conducted in Turkey at different levels to improve the quality of school buildings and standards have been developed to determine suitable learning environments. One of them is the Directive on Standards for Private Educational Institutions, which was updated in 2020. In this guideline, the mandatory spaces in elementary schools are indicated as follows: "principal's office, teachers' lounge, student affairs office, archive and records room, guidance and assessment room, classrooms, gymnasium, library, recess room, music instruction room, fine arts instruction room, playground, dining room, prayer room, restrooms." Other optional areas include "the office of the deputy principal, a classroom for preschool education, a multipurpose room, a science laboratory, a health room, a kitchen, a canteen, a teachers' room, a room for support staff, a room for parent meetings, and a swimming pool" (Ministry of Turkey Ministry of National Education, 2020b, pp.7-8). However, it can be seen that the aforementioned spaces are incomplete or insufficient in many primary schools, especially since the classrooms and playgrounds

cannot meet the needs of young students and are far from these standards (Akbaba & Turhan, 2016; Gültekin & Özenç-İra, 2021; Radmard, Karataş, & Öksüz-Gül, 2019; Yılmaz, 2012).

In addition, "school buildings, gardens, gymnasiums, laboratories, and other such facilities" are identified as priority needs in the Turkish Ministry of Education's Strategic Plan for 2019-2023 (Republic of Turkey Ministry of National Education, 2019). The Eleventh Development Plan (2019-2023) states that "educational buildings are designed with architecture that is compatible with technology and the environment, safe, economical, aesthetic, accessible, with high standards and quality" (Presidency of Turkey, Presidency of Strategy and Budget, 2019, p.34).

The Aim of the Study

This paper aims to contribute to the debate on the relationship between pedagogy and learning environments and what kind of school design should be promoted by governments that serve 21st century learners. Many studies in the international literature focus on school design standards. The result can be a complicated view of what constitutes pedagogically oriented learning environments. Therefore, this article focuses primarily on 21st century skills and modern approaches to learning and teaching. Integrating the pedagogically oriented design ideas that are the focus of these studies can present the relationship between pedagogy and physical environment from a more holistic perspective. Another consideration of this study is that there is little evidence on how school design initiatives (in educational policy or academic studies) improve pedagogy or on what pedagogical principles these studies are based. This issue is critical because the factor that determines student progress is not only the change in the physical learning environment, but also the regulation of that change according to 21st century skills and pedagogical needs (Ayre, 2017). The paper also focuses on child development because this provides an interesting insight into debates about school design, especially since a number of issues such as ethical, cultural, intellectual, and aesthetic development that are not directly related to the pedagogical design foundations of schools are overlooked in this context. Hence, in this study, an attempt was made to answer the question: 'What is design principles based on pedagogy that reflects the characteristics of the physical learning environment of primary schools in the 21st century?' Nowadays, architectural design teams of schools are composed of students, teachers, educators, architects, engineers, and administrators (Bardone & Gargiulo, 2014). It is expected that this study will contribute to the pedagogical foundations of schools to be designed in the future and help design teams combine their disciplinary perspectives.

Methodology

In this study, studies on pedagogical design foundations of primary schools (educational policy reports, articles, dissertations) were examined using the technique of document analysis. Document analysis is a method that examines written materials that contain information about the studied cases (Şimşek & Yıldırım, 2011). Studies including keywords "school design, school architecture, pedagogy, schools in the 21st century, learning spaces, and physical learning environments" were included in the review with no year limit to avoid data loss. Later, studies eliminated to have appropriate content for the research question. The reviewed studies were analyzed using the content analysis method. First, the data were collected, then the unit of analysis was defined, categories and themes were determined, and the results were reported (Tavşancıl & Aslan, 2001). The two researchers first worked independently to create the codes, themes, and categories and then came together to reach a consensus.

Studies Included in the Review

When the studies on this topic are examined (Ayre, 2017; Bosworth, Ford, & Hernandez, 2011; Brkovic, Pons, & Parnell, 2015; Cole, 2014; Cutter-Mackenzie, 2009; Darmody, Smyth, & Doherty, 2010; EDUSPACES21, 2016; Fisher, 2010; Fisher, Godwin, & Seltman, 2014; Flores, 2008; Foster et al., 2006; Giraldo-Henao, 2017; Göçen, Eral & Bücük, 2020; Hanovar Research, 2011; Higgins et al, 2005; Leiringer, & Cardellino, 2011; Luna-Scott, 2015; Milo-Shussman, 2017; Nair & Fielding, 2013; O'Donnell, 2012; Rigolon & Alloway, 2011; Sigurðardottir & Hjartarson, 2011; Sutherland & Fischer, 2014), the design of the physical learning environment was considered in the context of the pedagogical foundations that guide 21st century primary schools were subsumed under two main

categories of 'child-friendly design' and 'design for learning'. The design principles for the physical learning environment under these categories are adressed.

Child-friendly Design

For many young children, primary school is a new environment in which they need to adapt. Some physical provisions in schools will ease children's transition to primary school. It is necessary to create an attractive, friendly, healthy and safe environment where children can learn and play together. Uludağ and Odacı (2002, p.154) stated that physical learning environments should have four characteristics: They should be functional, reflect the intensity of emotions, be flexible, and have an aesthetic value that can serve different learning purposes.

Child-scale Area

This concept refers to the design of physical learning environments in primary schools with the perspective of the child and different sizes for the development of children in all aspects. Physical learning areas should include different sizes, such as large areas for physical development, medium areas for student work, and smaller areas for social contact. However, it is recommended to pay attention to the size of these areas (Rigolon & Alloway, 2011, p.69): "Small sizes can give the impression of overcrowding and limit the diversity of school areas; too large dimensions can weaken students' sense of control and also cause children to lose their sense of direction in school."

O'Donnell (2012) suggested metaphorical environments such as houses, neighborhoods, and villages that gradually scale to accommodate elementary students to a broader learning community. To this end, for example, the same grade levels can join together to form neighborhoods. Later, neighborhoods can join together and become a learning village. Public areas of the school (hallways, school garden, etc.) can be considered streets or shopping areas. Tables and chairs outside the classroom can extend learning into the living areas of the building. All students can gather in a town square where school events are held. When designing the classroom, any surface of the classroom, especially the walls, but also the ceiling and floor, can be incorporated into the learning process. However, care should be taken to ensure that the objects on the floors, such as the walls to be used, are within the scale of the children.

Interactive Open Spaces

When school open spaces are interactive, they can support the development of children's personal and interpersonal skills (Foster et al., 2006; Rigolon & Alloway, 2011). In this sense, the educational goals of school gardens are as follows (Foster et al., 2006, p.13):

- Allow children to participate
- Provide outdoor teaching spaces that are sheltered, safe and secure
- Layout space and facilities for all forms of play
- Stimulate creativity
- Contribute to pupils' health and well-being
- Create places where nature may thrive
- Celebrate diversity
- Encourage responsibility through citizenship
- Provide opportunities for enriching the curriculum
- Provide sports facilities of a suitable standard
- Be located at the heart of the community

To achieve these accomplishments, it is recommended that sustainability be considered in the fields and that safe, healthy, functional, and esthetic areas be created (Foster et al., 2006). Playgrounds can also provide a unique opportunity to provide students with experiences of intercultural learning. School garden activities can enhance children's social development, teach them about the environment, and even improve their intercultural skills, as can be cited an example The Multicultural Schools Gardens program (Cutter-Mackenzie, 2009). This program was implemented in low-income primary schools to implement a culture-based environmental education program. Through this program, students designed their gardens as part of a learning community. This program resulted in a

strong sense of belonging among students and provided opportunities to learn languages and connect with the local environment.

Design for Learning

The development of learning and teaching approaches that enhance 21st century skills (Hanovar Research, 2011), the advancement of educational technology (Sutherland & Fischer, 2014), initiatives for disadvantaged students in education (Flores, 2008; Sigurðardottir & Hjartarson, 2011) contribute to the redesign of physical learning environments. School physical learning environments should enable collaborative work to develop 21st century skills in individuals, including creativity, leadership, communication, teamwork, and other interpersonal skills. Besides, learning approaches such as flipped learning and project-based learning require more movement space and flexible and adaptable classroom spaces (Luna-Scott, 2015). The ideal size of physical learning environments can vary.

Spaces as teaching tools

In this concept, every corner of the school is a learning space (Darmody et al., 2010). Accordingly, it is about making all areas of the school suitable for learning. By making the school structure environmentally friendly, students can acquire environmental knowledge (for example, The Teaching Green School Building, Cole, 2014). The school's ceilings and floors can facilitate learning for math, science, and art. For example, the classroom doors and cabinets can be designed to include different shapes or patterns to teach geometry in mathematics (Sigurðardottir & Hjartarson, 2011). However, it should be considered that using more visual stimuli in classrooms may not be associated with more learning, but rather distracting (Fisher, Godwin, & Seltman, 2014; Milo-Shussman, 2017). Another approach that takes classrooms out of their traditional use is themed learning areas. These areas can be a kitchen, a theatre room, etc. For example, in the kitchen, students can learn math while baking number-shaped cookies (EDUSPACE21, 2016).

Flexible spaces

Flexibility refers to the arrangement of physical spaces to meet students' diverse learning needs (Hanovar Research, 2011). Flexible learning spaces allow students to make their own decisions regarding their learning needs (Ayre, 2017). For this reason, flexibility and adaptability are among the fundamental design principles of 21st century schools. Classes should be large and flexible enough to allow for the use of many teaching methods, including group work, self-discovery learning, and play (Darmody et al., 2010; Higgins et al., 2005). Physical learning environments include school gardens and indoor and outdoor courtyards where students can collaborate (Hanovar Research, 2011).

The rapid development of educational technologies requires that physical learning spaces integrate educational technologies (Fisher, 2010). The role of digital technologies in facilitating formal and informal learning is more emphasised. Digital technologies are expected to change the nature of physical and virtual learning spaces in the future (Sutherland & Fischer, 2014). Extraordinary situations that affect all of humanity, such as the outbreak of a disaster, can add a new dimension to learning spaces with educational technologies. Digital learning environments allow learners to access educational content at any time. Besides, because they allow for formative assessment, student development can be tracked during the instructional process (EDUSPACE21, 2016). The integration of technologies into the classroom environment must be flexible and adaptable (Göçen, Eral, & Bücük, 2020). This requires that physical areas-from computer labs to classrooms-can be easily adapted to productive use and have furniture that is suitable for the use of laptops and other mobile technologies (O'Donnell, 2012). However, special attention should be paid to the fact that these technologies promote active learning in the classroom (Darmody et al., 2010; Fisher, 2010).

Community-connected spaces

School interactivity with the community is associated with a more qualified education and a strong social bond (Nair & Fielding, 2013). It can also contribute to the perception of schools as safer areas by students (Bosworth et al., 2011; Brkovic et al., 2015). Strong interaction between family and school can also strengthen learners' social-emotional development, self-control, and belonging (The

National Academies of Sciences, Engineering, & Medicine, 2020). These close ties with the community can support both social and ethical development (Rigolon & Alloway, 2011). Schools should be in a position where students can engage in activities with the community in the open areas of the school (Brkovic et al., 2015; Nair & Fielding, 2013). In particular, to facilitate the participation of parents in school life, allocated spaces for parents to meet during school days are needed (Darmody et al., 2010).

Discussion, Conclusion and Recommendations

It is not possible to provide a single prescription for the physical learning environments of 21st century primary schools. The sociocultural characteristics and needs of society, the demographics and needs of learners, the economic conditions of the school, the social image and role of the school, and even the esthetic tastes of teachers can all contribute in unique ways to the design of physical learning spaces. In addition, the changing profile of 21st century students and their views of learning require effective use of all areas in and around the classroom and school to make these environments more productive. The physical environments of schools should accommodate the following learning approaches (Nair & Fielding, 2013, p.19), i.e., "independent learning, peer tutoring, teamwork, one-on-one instruction with teachers, project-based learning, technology-based learning with mobile computers, distance learning, performance- and music-based learning, seminar-based instruction, community service learning, naturalistic learning, social/emotional learning, arts-based learning, learning by building." In addition, physical learning environments should have adequate technological equipment and learning centers that allow for group and individual work to take advantage of individualized learning approaches. Indeed, the function of learning spaces leads to some outcomes based on psychosocial and behavioral elements as well as learning and pedagogy. When the function of physical spaces and pedagogical goals are not compatible or the purpose and messages of learning spaces are not clear, many negative interrelated outcomes can occur in the learning and teaching process, such as undesirable student behavior, safety issues, areas that are less supportive of learning and teaching, lower student achievement, etc. Therefore, it is important to take pedagogical concepts and principles as the basis for designing functional areas. In this study, the basic pedagogical principles that guide elementary schools were elaborated under the themes of child-friendly design and design for learning needs. The pedagogical design principles for the physical learning environments were child-friendly and esthetic (or according to children's tastes), interactive, open, intended as a teaching tool, flexible, and connected to the community.

The learning spaces of the school should guide the transition of children to a broader learning community through areas that scale. Consequently, using objects suitable for their physical dimensions and using adaptable furniture for various purposes, setting up the classrooms as a learning scene; above all, it makes it necessary to move all areas of the school beyond traditional use. Correspondingly, having spaces in schools that allow community participation as public spaces and organizing activities that let effective utilization of these spaces can help children develop their sense of social belonging, also learn social, cultural and ethical behaviors.

The studies evaluating the physical conditions of the school building point out many quantitative and qualitative issues in Turkey. These are as follows: inadequate provision of education and training needs of the various spaces of the school (Akbaba & Turhan, 2016; Yılmaz, 2012), technological equipment deficiency in schools (Göçen, Eral, & Bücük, 2020), because of the crowd schools' sacrificing libraries, sports halls, laboratories or narrow closed circulation areas to create classrooms (Köse & Barkul, 2012), the inability of schools to provide the necessary spatial conditions due to the unsuitable settlement and grounds where primary schools (Köse & Barkul, 2012), lack of special regulations for people with disabilities (Akbaba & Turhan, 2016), playgrounds consisting of concrete floors, and no suitable area for children to play, do sports and physical activities (Akbaba & Turhan, 2016; Işıkoğlu-Erdoğan & Şimşek, 2014). All these mentioned problems prevent the use of physical structures and spaces that will support the development of learners in the most effective ways today. In this respect, there is a need for newly designed schools that will increase the learning motivation of children in primary schools and support their physical, social and cultural development. Taken together, the pedagogical design principles for elementary schools in the 21st century can be described as follows:

- The pedagogy should be consistent with the design of physical learning environments.
- Learning environments should be flexible and adaptable to meet indivudialized learning approaches.
- Classrooms should have focal points of interest, and physical space should allow for group work. Therefore, classroom equipment (e.g., furniture, presentation aids, and technical equipment) must be adaptable.
- Physical learning environments should take learning beyond classrooms and be functional.
- Class size should be appropriately determined and arranged according to the needs of learners and the size of the physical environment.
- There should be centers of interest in classrooms, and physical arrangements should allow group work. Thus, the equipment of the classrooms (such as furniture, presentation tools, and technological devices) must be adaptable.
- Learning environments should be organized for social interaction in a variety of sizes and should include communal areas where the entire school community gathers.
- Furniture and materials must be appropriate for the developmental characteristics and interests of elementary school-aged children.
- The school's playground should allow for community participation and various activities such as sports, games, gardening, and recreation.
- The perspective of children must be considered when designing the physical learning environment.

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