

Examining Preschool Education Buildings with Sustainable Architectural Approach: Two Examples in Konya, Selçuklu

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Abstract

Within the scope of the study, two kindergartens that use an ecological approach and are located in the Selçuklu district of Konya province—one connected to the state and the other to a private institution—were chosen in this regard. Even though the sample schools did not have any sustainable architecture certificates, they were selected because they adopted an ecological approach. Three steps make up the study methodology. The source scanning phase is the first. The second phase, the field study, entails gathering information about the structures chosen for the field study through observation, interviews, photography, and measurement. The evaluation stage is the final step, during which it is determined whether the model schools have ecologically, socially, and economically sustainable architectural elements, and recommendations for improvement are made. As a result, building buildings with a sustainable architectural approach is necessary for the foundation of environmentally sensitive societies.

Keywords: Child, environmental awareness, preschool education buildings, sustainable architecture.

Okul Öncesi Eğitim Yapılarının Sürdürülebilir Mimari Yaklaşım ile Analizi: Konya Selçuklu'da İki Örnek

Öz

Çalışma kapsamında Konya ili, Selçuklu ilçesinde yer alan biri devlet, diğeri özel bir kuruma bağlı olan ekolojik yaklaşımı benimsemiş iki anaokulu seçilmiştir. Örneklem okulların herhangi bir sürdürülebilir mimari sertifikası olmasa bile ekolojik yaklaşımı benimsemiş olması açısından seçilmelerinde etkili olmuştur. Çalışma metodolojisi üç aşamadan oluşmaktadır. Birinci aşama; kaynak taramasıdır. İkinci aşama; alan çalışması olarak seçilen yapılarla ilgili gözlem, görüşme, fotoğraflama, ölçü alma gibi eylemlerin gerçekleştirildiği saha çalışmasıdır. Son aşama ise ekolojik, sosyal ve ekonomik sürdürülebilir mimari bileşenlerin örneklem okullarda mevcudiyetinin tespit edilerek, iyileştirmeye yönelik önerilerin sunulduğu değerlendirme aşamasıdır. Sonuç olarak yapıların sürdürülebilir mimari yaklaşımıyla inşa edilmesi çevreye duyarlı toplumların temeli için gereklidir.

Anahtar kelimeler: Çocuk, çevresel bilinç, okul öncesi eğitim yapıları, sürdürülebilir mimari.

Citation: Sungur, M. (2024). Examining preschool education buildings with sustainable architectural approach: Two examples in Konya, Selçuklu. *Journal of Architectural Sciences and Applications*, 9 (1), 277-301.

DOI: <https://doi.org/10.30785/mbud.1382686>



1. Introduction

I hear and I forget. I see and I remember. I do and I understand.
(Confucius)

Today, with interconnected actions like urbanization, industrialization, population growth, and irregular migration on the rise and the threat of diminishing natural resources, the concept of "sustainability" is very prominent. Every facet of daily life is affected by the notion of sustainability, ranging from the economy to the environment, from architecture to education. While the literature generally believes that the concept in question was first introduced in 1713, serious discussions about it in the context of the environment began after 1970 (Şen, Kaya & Alparslan, 2018). When it comes to the field of architecture that is directly related to the environment, sustainability rules over design approaches that envision a fair distribution of resources, seek to maintain social progress and concentrate on the planet's future with the primary goal of enhancing environmental conditions. Because of this, sustainable architecture is a design philosophy in the field of architecture that highlights environmental issues that pose a threat to human health and shields the environment from the damaging effects of the industrial age (Reid, 1995). In this context, environmental, economic, and social aspects of sustainable architecture must be taken into account as a whole (Sakinç, 2006). The concept of sustainability ought to extend beyond the present and become a way of life for generations to come. To safeguard and conserve natural resources for future generations, people should be environmentally conscious (Kocabaş & Bademcioğlu, 2017). To address the concept of sustainability as a whole in its environmental, social and economic dimensions, it is crucial to raise environmental awareness beginning in the pre-school years (Kaya & Kaya, 2019).

Child and education are two powerful keywords in raising environmental consciousness in society because fostering environmental consciousness at a young age is a crucial first step in increasing social awareness. Young children who receive environmental education are more likely to grow up to be environmentally conscious adults who respect the natural world's balance and see themselves as a part of it rather than its rulers (Kayihan & Tönük, 2008; Shahli & Akasah, 2019). Because of this, compared to other types, educational buildings have a great deal of importance and potential because they can teach future generations about sustainability in addition to education (Evrans, 2012). Environmental responsibility can be instilled in young people by actively living sustainable design principles, as educational buildings serve as places of learning and experience for all (Government Architect New South Wales, 2018). Numerous researchers have highlighted how sustainable educational buildings improve students' learning outcomes (Kayihan & Tönük, 2010; Ramli, Masri, Taib & Hamid, 2012; Sivri Gökmen, 2012; Şahin & Dostoğlu, 2015; Yanılmaz & Tavşan, 2021). Schools must address sustainability, as a building featuring sustainable design elements can help students manage the uncertainties of the future (Zurita, 2008). Sustainable building practices are the subject of countless studies in the field of architecture. A few of these have to do with how sustainable school buildings are. Several sustainability criteria are established and the prerequisites are enumerated in the studies covered in this regard. However, theoretical discussions dominated the discussion of these studies (Tavşan & Yanılmaz, 2019). Although there are many initiatives for sustainable school design (Şahin & Dostoğlu, 2015; Zhang, Wang, Wang, Gao, Zhu & Song, 2021), the number of studies focusing on existing school buildings is rather inadequate. Schools are more than just actual buildings. Its architectural layouts and spatial arrangements can provide students with a quiet language for experiencing ecological living. To promote environmental awareness, Newton, Wilks & Hes (2009) highlight educational buildings with ecological features, noting that "buildings that perform well in terms of environmental impact offer excellent opportunities as a teaching tool".

However, using the existing building stock rather than demolishing and rebuilding the building will provide general environmental, economic, social and cultural benefits—given that every new building will harm the environment during the construction process. Reevaluating existing buildings with an ecological approach is a crucial step towards sustainable architecture for a sustainable approach, as it ensures the best possible use of diminishing resources and yields economic benefits (Aydın & Okuyucu 2009). Therefore, minimizing harm to the environment by making ecological improvements to existing buildings is a crucial step in the development of sustainable architectural approaches. Sustainable work

can still be done even in cases where there is an excess of existing building stock (Karadayı, Yüksek & Tunçbiz, 2017). As of 2020, there are 68,589 schools in Turkey offering formal education, according to data from the Ministry of National Education (2012). Preschool education buildings make up 11,485 of these schools (Turkey's education-training statistics announced, 2020). In this instance, preschool buildings make up about 17% of all school buildings used for formal education. Hence, a large amount of our nation's basic education facilities are located in preschool education buildings, so ecological renovation or improvement of these facilities will go a long way toward laying the groundwork for a society that is environmentally conscious. With well-designed educational structures that can accommodate a variety of child needs, a child can receive the desired quality education during the preschool years, when the child develops identity and skills (Tonguç & Özbayraktar, 2017). Preschool buildings can therefore be utilized as a possible educational tool to encourage children to be environmentally sustainable.

Given this, the vast majority of preschool structures were constructed without taking environmental issues into account. A challenge for the study is the requirement to both construct new buildings with ecological features and renovate/improve existing ones to have them. Because early childhood is a time of learning and discovery when a child is most influenced by their surroundings and naturally develops a sense of curiosity, preschool buildings were selected as the study area. From the Selçuklu district of Konya province, two environmentally delicate kindergarten buildings were chosen: one was a public school and the other was a private. Private school budgets are funded by the person or people who own the school, whereas public school budgets are funded by state taxes levied on citizens (Kandemir, 2015). Therefore, the design and construction of school buildings are influenced by economic factors. The aforementioned schools were scrutinized based on sustainability components. Building-related issues were found through qualitative data collection techniques like document analysis, on-site observation, interviews, and photography. Sample schools were then compared in light of the findings.

Financial concerns are the primary cause of deficiencies found in schools. The ecological characteristics of these schools are also affected by the varying budgets. Unfortunately, there is a lack of research on sustainability as it is not yet a popular concept in society. Thus, focusing on educational facilities can greatly increase national consciousness of environmental issues. To achieve this, sustainable school design guidelines and model projects can expose future engineers and designers to sustainability at a young age. It is important that we do not disregard this objective and view it as a significant advancement in the field.

2. Material and Method

Institutions of higher learning are settings that give kids the chance to take the initial step toward gaining an awareness of the environment and raising enough awareness. Nevertheless, the concepts that ought to be considered when developing sustainable educational buildings both domestically and abroad are overlooked. The low number of applications in the world and our nation that consider sustainable design principles is criticized by Şahin & Dostoğlu (2015). Furthermore, they stress the need for further application and research efforts, although there has been a recent surge in interest in the topic in Turkey. It is especially valuable to take even modest actions within this framework to increase public awareness of sustainability. According to Murphy & Thorne (2010), "education for sustainability" programs must begin in the preschool years. They compare schools to laboratories in terms of stimulating society in terms of sustainability apart from the education they provide. Thus, it is important to maintain existing buildings in addition to developing new sustainable ones since only a small portion of the stock of existing buildings is new construction (Tonguç, 2012).

In this regard, it is important to determine the preschool buildings that currently exist and take action to enhance their ecological qualities. Different academic fields have discussed sustainability and environmental awareness in preschoolers; this study highlights educational structures that provide environments where children can experience and learn about these ideas. The first steps in this direction included developing a conceptual framework for environmental consciousness in early childhood education and the sustainability of early childhood education institutions. The information

gathered led to the design of the study methodology. The working method is described in detail under the second and third method headings as a result of the information gathered.

2.1. Environmental Awareness in Preschool Education

In the twenty-first century, preschool education is becoming more and more crucial since children's first five years of life are when they develop most rapidly, not only in terms of their cognitive and perceptual abilities but also in terms of personality, social skills, and emotions (Uysal, 2006). The preschool years, which span from birth to the end of six years of age, are among the most significant life transitions (Turaşlı, 2007). "Pre-school education institutions" are all establishments that offer instruction to children in the current educational system and assist with their development, ranging in age from 0 to 6 (Oktay, 1999). The first educational setting in which a person enters their academic career is a preschool. It is also the first step toward producing aware and valuable citizens. Early infancy is when social and moral values that shape a child's future are first transmitted. Because it imparts fundamental knowledge and skills, preschool education is crucial during this time (Kalemci, 1998; Şahin, 2005; Yavuzer, 2002). Preschool education, which is depicted in different ways in various sources, was defined in the Fourteenth National Education Council as "providing rich stimulants and environmental opportunities appropriate to the developmental levels and individual characteristics of children in the 0–77-month group, supporting their physical, mental, emotional and social development, and supporting them in the society of the society." It is clarified as "an educational process within the integrity of basic education that guides students in the best way in line with cultural values and prepares them for primary education (Turaşlı, 2007). Early childhood education facilities can help prepare a child for social life in their early years. The goals of preschool education programs are to provide children with the fundamental life skills they need and to make sure they spend this time in a healthy and productive manner in accordance with their physical, social, emotional, and cognitive development. As a result, social awareness will start to develop at a young age (Yağlıkara, 2006). All people must take part in the process of developing social awareness, and it's critical to start laying the groundwork for awareness at a young age.

Preschool education institutions can help prepare young children for social life in the early years (Cömert, 2004). Environmental awareness is one of the skills, attitudes, and knowledge that preschool education should instil in children. In 2006, Türküm defined environmental awareness as "the individual can respect both himself/herself and nature without forgetting yesterday and today, past and future," acknowledging it as a social and personal responsibility. By guaranteeing environmental protection and identifying workable solutions to environmental issues, people's environmental awareness helps to create a sustainable and livable environment. Environmental education is essential for the growth of environmental consciousness because it enables people to identify all the factors that upset the natural balance, examine the connections between these factors, and recognize the value of natural resources and living things (Geray, 1997). Ünal, Mançuhan & Sayar (2001) describe environmental education as a process that can be offered with a variety of learning environments and instructional approaches. To increase environmental awareness, education must use appropriate teaching strategies, relevant materials, and hands-on learning (Doğan & Akaydın, 2000). The characteristics of the target audience should be considered when offering environmental education. Because this is a way to raise environmentally conscious kids and teens. Preschool-aged children are the target audience's initial step in developing environmental awareness (Yıldız, Sipahioğlu & Yılmaz, 2000). Thus, preschool is a good time to lay the groundwork for raising sensitive people.

To be productive, constructive, and aware in every subject, it can be argued that it is critical that young children—who will grow up to be adults—go through an efficient preschool education process and start to develop environmental values (Çabuk, 2003). The first step in helping a child develop environmental awareness is for preschool education institutions to raise enough awareness about the environment (Ural, 1993). One step toward environmental awareness is environmental awareness. It makes up the environmental awareness's cognitive component. By beginning to recognize his/her surroundings, the child develops awareness (Atasoy, 2006). A preschooler's environment is made up of his or her entire living situation. "Knowing his environment and protecting it" refers to the

knowledge that children can acquire about their surroundings. Preschoolers raised in diverse cultures can exhibit a heightened sensitivity to the natural world, according to research. It has been observed that when children's natural curiosity and interest in the environment are appropriately directed, they perceive the environment and environmental problems better (Haktanır & Çabuk, 2000). Given that children are the demographic most impacted by environmental issues, environmental education must begin early (Göka, 1997; Kocakurt & Güven, 2005). Furthermore, children who are exposed to information about plants, animals, and the environment from an early age have the chance to get to know nature better, which serves as a foundation for their love of and desire to preserve it (Nazlıoğlu, 1991).

Growing urbanization brought on by population growth distances people from the natural world and, consequently, from children. Additionally, it is insufficient to instill in kids who grow up in urban areas without exposure to the outdoors the knowledge that they are a part of it. Raising awareness of the environment in cities can be achieved in part by designing buildings with sustainable features (Kaya & Kaya, 2019). Yürekli & Yürekli (1999) emphasize that "children are impacted by good and bad, as well as ugly and beautiful, very quickly because they have larger memory banks and perceive their surroundings more quickly than adults. According to him, "school is the place where people are most affected after home and family", which highlights the significance of education in promoting environmental awareness. Children can acquire environmental awareness at a young age by being exposed to sustainable architecture in preschool education buildings (Mehrabansehgonbad, Falahatdoost & Mohammadkhani, 2019; Shahli & Akasah, 2019; Zhang et al., 2021).

2.2. Sustainable Architecture in Preschool Education Buildings

Sustainable architecture, also known as green architecture or ecological architecture in the literature, has been defined in a variety of ways by different scholars. According to Sev (2009), sustainable architecture is "any activities of creating structures that protect people's health and comfort," and it is "one that prioritizes the use of renewable energy resources, is environmentally friendly, uses energy, water, materials, and the area effectively, taking into account future generations in its current conditions and every period of its existence." Three categories of sustainable architecture principles are identified by Kim & Rigdon (1998): life cycle design, efficient use of resources, enhancing human well-being, and aesthetics. The life cycle is defined as the phases of design, construction, operation, maintenance, and demolition. Effective use of resources is defined as an important principle that begins with the production of building materials and continues throughout the building life cycle, reducing the use of non-renewable energy. According to Kim & Rigdon (1998), enhancing the quality of human life means protecting human health and comfort as well as raising and improving living standards, as well as the cultural, social, and physical environments. In summary, sustainable architecture uses available resources and conditions in a production-oriented rather than consumption-oriented manner, taking into account the benefits to the surrounding environment throughout the building's life cycle. Basic standards for building environmental assessment and certification systems are provided by this surveillance (Utkutuğ, 2011). Among the widely used building environmental assessment systems globally, LEED and BREEAM are regarded as crucial instruments for implementing global sustainability goals in local spaces (Özçevik, Ertekin, Eyüboğlu, Oğuz, Akbulut, Çelik, Sandıkçı & Kantemir, 2018).

Within the context of sustainability, the US Green Building Council developed L.E.E.D. (Leadership in Energy and Environmental Design) in 1993 using standards that promote sustainable and environmentally friendly building practices. Sustainable spaces, efficient use of water, energy, and atmosphere, materials and resources, interior environmental quality, and the growth of creativity and design are the primary LEED evaluation criteria. B.R.E.E.A.M. is an additional green building rating system. The Building Research Council first introduced B.R.E.E.A.M. in England in 1990. The first certification program based on criteria is the Environmental Assessment Method of the Building Research Establishment. Reducing the long-term detrimental effects of buildings on the environment is the goal of B.R.E.E.A.M. Ten categories make up the system: materials, waste, energy, management,

health and happiness, transportation, water, land use and ecology, pollution, and development (Tonguç, 2012), (Table 1).

Table 1. LEED and BREEAM Certification evaluation system criteria (created by the author using Tonguç, 2012)

LEED Certificate	Energy	Building Area Use and Ecology	Pollution
Assessment System	Transportation	Health and Comfort	Water
Criteria		Management	Building Materials
BREEAM Certificate	Transportation	Innovation and Design	Energy and
Assessment System	Innovation	Sustainable Lands	Atmosphere
Criteria	Materials and Resources	Water and Water Activity	Construction
		Interior Quality	Materials

The majority of LEED-certified buildings in Turkey are found in the provinces of Istanbul, Ankara, and Izmir. The number of certified buildings in Bursa (5), Konya (4), Antalya (5), and other provinces is growing daily (LEED Certified in Turkey Buildings, 2022). The majority of certified buildings in Turkey are office and residential structures; educational buildings lag behind these advancements (Tonguç, 2012; Evran, 2012). Table 2 shows that the majority of Turkey's educational buildings with BREEAM or LEED certifications are found in Istanbul, Ankara (1), and Bursa (1). The only LEED-certified kindergartens in Turkey are the Ankara Metropolitan Municipality Çayyolu Barrier-Free Nursery Building and Bahriye Üçok Kindergarten, which are separate and not attached to the educational campus. Table 2 makes it clear that kindergartens in our nation are insufficiently sustainable, given that preschoolers spend the majority of their time in educational settings.

Table 2. Educational Buildings with LEED and BREEAM Certificate Evaluation System in Turkey (Made by the author using LEED Certified in Turkey Buildings, 2022; Şahin & Dostoğlu, 2015)

LEED Certified Educational Buildings in Turkey		
Project Name	Evaluation Note	Location
TED Renaissance College	Golden Certificate	İstanbul
Acıbadem University Faculty of Medicine	Golden Certificate	İstanbul
Özyeğin University Building 2	Golden Certificate	İstanbul
Özyeğin University Engineering Building	Golden Certificate	İstanbul
Özyeğin University Student Center	Golden Certificate	İstanbul
Kadıköy Atatürk Science High School	Platinum Certificate	İstanbul
Acıbadem University Kerem Aydınlar Campus Vocational School	Golden Certificate	İstanbul
Acıbadem University Faculty of Medicine	Golden Certificate	İstanbul
Terakki Foundation Private Şişli Terakki Tepeören Campus	Golden Certificate	İstanbul
Cihangir Bahçeşir College	Certified	İstanbul
TED Renaissance College	Golden Certificate	İstanbul
Bahriye Üçok Kindergarten	Platinum Certificate	İstanbul
Ankara Metropolitan Municipality Çayyolu Barrier-Free Nursery Building	Golden Certificate	Ankara
BREEAM Certified Educational Buildings in Turkey		
Project Name	Evaluation Note	Location
Piri Reis University	Very Good	İstanbul
Automotive Industry Exporters Association Technical and Industrial Vocational High School	Very Good	Bursa
Erkut Soyak High School	Good	İstanbul
Sabancı University Nano Technology Building	Very Good	İstanbul

In addition to raising awareness of sustainability, sustainable education programs help kids and other community members adopt a sustainable lifestyle. According to Nair & Fielding (2013), "a dynamic

model that explains sustainable design, architecture, engineering, construction, environmental science, and harmony with nature in a school environment is an excellent learning tool.", adding that sustainable education spaces are described as an applied laboratory environment.

Numerous researchers have proposed the fundamental objectives and tenets of sustainable learning environments. According to Kocabaş & Bademcioğlu (2017), the following are the green school requirements for raising awareness of the need to preserve and protect the environment for coming generations:

- The primary and most crucial objective when developing or operating a green school is safeguarding and maintaining the environment.
- As much natural light as possible should be utilized. By boosting their productivity and success, this has a positive impact on building users' physical and mental health.
- There are several ways to enhance indoor air quality. Users of a building can avoid developing asthma or allergies by maintaining good indoor air quality.
- It is crucial that the building has the highest caliber water-saving fixtures installed.
- Reducing energy use and making efficient use of renewable energy sources are critical.
- It is important to keep noise levels in the classroom within reasonable bounds and to keep outside noise at bay.
- Materials that won't damage the environment or the health of students or teachers should be used to select the equipment for use in the school building and classrooms.

It is anticipated that the green school will guarantee that the next generation is raised with an awareness of sustainability. The following is a list of the objectives that can be met by sustainable schools, according to the Sustainable School Design guidelines (Dorsey & L'Es-perance, 2000):

- Raising student achievement and attendance;
- Imparting sustainable design concepts;
- Harmonizing with the environment;
- Providing excellent lighting;
- Using less energy;
- Conserving natural resources and materials;
- Enhancing the indoor environment;
- Safeguarding waterways.

The spatial and social integrity of educational buildings must meet the requirements for sustainability (Göktekin, 2015). At this point;

- Selecting the right site (one that will protect users from outside sources of pollution, have the least detrimental effect on the ecosystem, and be suitable for the design of buildings that meet sustainable criteria).
- Creating a thorough transportation plan that reduces environmental pollution (which ought to begin during the land selection phase),
- Reducing the building's life cycle expenses (construction, operation, maintenance-repair, demolition),
- Including active (solar collectors, photovoltaic systems, etc.) and passive (greenhouses, roof windows, heat-storing walls, solar chimneys, etc.) systems in the construction to lower energy needs,
- Boasting environmentally friendly and locally sourced building materials, roof gardens, natural ventilation systems, rainwater collection, ample daylight, acoustic comfort, and high-quality indoor air quality, among other sustainable attributes,
- Reducing and managing waste through the application of material reuse and recovery policies both during and after building construction.
- Being adaptable to changing circumstances and enhancing users' training performance,
- The structure serves as a teaching tool for sustainability awareness and is incorporated into educational initiatives,

- Creating open areas with varied experience environments to foster a child's connection with nature,
- Ensuring everyone's safety and accessibility, regardless of disability
- Ensuring that the local community benefits from the building's amenities is one of the design criteria for sustainable school buildings.

Kindergartens are crucial for the growth of the early childhood sustainability learning process among green school buildings. Children's needs must be taken into consideration when designing a building and its surroundings because they spend a significant amount of time and receive education in the school area (Shahli & Akasah, 2019). Recent studies that define the expected environmental conditions for schools have emphasized the significance of sustainable design. The use of daylight, clean air, and materials with low chemical properties is believed to be important in school buildings that adopt sustainable design principles to create a healthier and more productive environment for children. Schools should have natural light, clean air, a view, comfortable temperatures, acoustic conditions that enhance learning, opportunities for sports, the ability to use the environment as a learning resource, access to clean drinking water, social facilities, the promotion of friendship and social development, and security-sensitive features. According to Murphy & Thorne (2010), a sustainable school encompasses various aspects such as conserving energy and water, reducing waste, avoiding potential pollution, preserving and promoting the environment, making efficient use of material resources, and honouring the involvement of individuals. In this regard, it is crucial to integrate economic, social, and ecological sustainability components into the design process as evenly as possible to construct preschool educational buildings following the sustainable design approach.

According to Vivien (2008), *economic sustainability* involves using energy and resources wisely, as well as recycling and reusing items after they have been used. There are requirements for building form, material selection, space organization, building envelope, and building orientation under the category of economic sustainability (Tonguç, 2012). The environmental dimension—also referred to as *ecological sustainability*—focuses on waste reduction, recycling, and environmentally friendly production and consumption that doesn't negatively impact the ecosystem (Morelli, 2011). The selection of a residential area, water conservation, energy and atmosphere, transportation, natural lighting, and natural ventilation are all considered aspects of ecological sustainability (Tonguç, 2012). The *social dimension of sustainability* pertains to enhancing users' educational performance and promoting equality of opportunity, solidarity, and sharing among members of society (Des Jardins, 2006). It includes design requirements for social-cultural sustainability, such as understanding social needs and desires, creating a building that harmonizes with its surroundings, educating people about the preservation of natural resources and their future generations, bringing life to the immediate surroundings through user mobility, and promoting the city through the building (Tonguç, 2012).

In this regard, one of the first schools to be constructed and accredited with consideration for sustainability is the Dragen Children's House, which was established by the Odense Municipality in Denmark in 2009. In the building, where energy consumption and consequently carbon dioxide footprint have been significantly reduced, the use of environmentally harmful materials has been rejected. The building is situated in the middle of the neighbourhood apartments. The building was designed in the shape of a cube with a straightforward geometry, taking into consideration the best form selection depending on the climate. The building's surface area is reduced by its cube shape and lack of numerous protrusions and indentations. Trees are separating it from the road frontages. In addition to reducing traffic pollution and protecting children, trees also serve as noise cancellers. The building is a two-story educational facility with a high aspect ratio that prioritizes the safety of the kids inside (Figure 1).



Figure 1. Visuals from Dragen Children's Home (Children's House Dragen, 2012)

Large openings were made on the south-facing facade to maximize passive solar heating and daylight, while smaller, single windows were utilized on the north facade. The structure can maximize its natural lighting. The purpose of artificial lighting is to enhance natural lighting. To optimize the use of natural lighting, careful consideration was given to space organization and orientation (Figure 2).



Figure 2. Visuals from Dragen Children's Home (Children's House Dragen, 2012)

The entire structure was built using Nordic Swan-labeled wood products, which are recyclable, healthful, and friendly to the environment. The stairs and railings inside are made of wood. Reinforced concrete makes up the building's exterior shell. Outside, permeable materials like grass and sand were used to stop rainwater from seeping below the surface. The view was attained and natural light was used with the help of skylights. In addition, natural lighting brightens the building's ground floor corridors, which visually link the floors with the well-planned gallery space (Figure 3).



Figure 3. Visuals from Dragen Children's Home (Children's House Dragen, 2012)

The components of economic, ecological, and social sustainability must be incorporated into buildings from the design phase onward for the sake of future generations. While meeting human needs, comfort, originality, and aesthetics are the primary considerations in the design process (Yurtgün & Çınar, 2023), considering ecological issues sets the standard for better and higher-quality educational buildings. Consequently, in order to more successfully integrate sustainable design into the education agenda going forward, it is important to develop, enhance, and support currently constructed educational facilities (Gelder, 1998).

2.3. Method

It is stressed in literature reviews that a conscious social infrastructure depends on teaching the ecological and environmental learning model through experience starting at a young age.

Nevertheless, the research findings indicate that there aren't nearly enough sustainable projects in our nation's educational buildings. Specifically, there are remarkably few sustainable certified independent kindergartens (2). This is believed to be caused by political sanctions, economic worries, and a lack of environmental awareness in the general public. On the basis of this concept, sustainable elements ought to be incorporated into kindergarten construction projects going forward, beginning with the design phase. It is more crucial than ever to move quickly to identify and create viable sustainable elements in kindergartens that are currently in operation. Thus, this study is crucial to ascertain the potential of kindergartens that have adopted an ecological approach, even though there isn't a sustainable kindergarten certificate in our nation. Even though Konya is home to four LEED-certified projects, the city was chosen as the study area because none of the buildings are educational. Furthermore, two kindergartens—one public and the other private—were chosen; even though neither has a sustainable evaluation certificate, they have implemented an ecological approach in an effort to increase children's awareness of the environment.

Three steps make up the study methodology. The first step is a review of the literature in which numerous studies by various researchers are looked at. These studies cover topics like sustainability, preschoolers, and educational structures. The second phase, known as the field study, entails gathering information about the structures chosen for the field study through observation, interviews, photography, and measurement. The evaluation phase, which is the last part of the process, involves analyzing the buildings based on their sustainability components using all the data, documents, reports, and interviews that were gathered. Accurate information is attempted to be obtained by the inductive method from part to whole by using the qualitative research method. The discovery of theory, according to Glaser & Strauss (1967), should be predicated on data that is systematically gathered throughout the research process (Özdemir, 2010). The proper formation and completion of the evaluation phase are facilitated by the systematic construction of the field study and the scanning of sources (Figure 4).

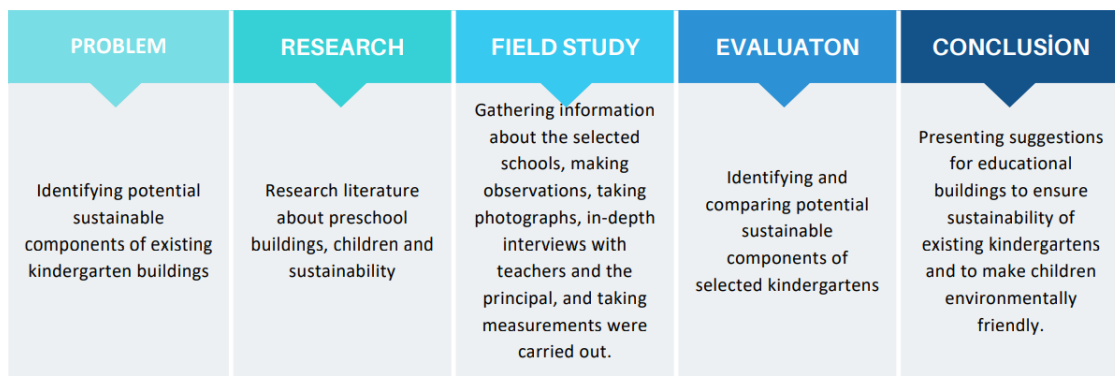


Figure 4. Methodological approach scheme of the study (Created by the Author)

2.3.1. Field study

The field study for the research included two types of schools: Konya/Selçuklu Private Ekolojik Kültür Kindergarten, a private school, and Selçuklu Municipality Sabır Kindergarten, a public school located in the Selçuklu District of Konya. Preschool education programs at both schools incorporate ecological awareness as a common feature. There are, nonetheless, discrepancies between the schools in question's physical attributes and curricula concerning social, ecological, and economic sustainability. In Turkey school buildings funded by the state were constructed without regard for standard climate and environmental considerations (Gültekin, Aruntaş & Gün, 2014). In its broadest definition, private schools are, on the other hand, establishments where instructional procedures are actively carried out and where the institution's operating costs are not met by state funding. These institutions' budgets for physical education and recreation are overseen by individuals, groups, or institutions. Due to advertisements that highlight students' academic success, private schools today shape families' preferences through their physical layouts, and evaluations also consider the beneficial effects of spatial conditions (Yaman, 2021). Because of this, two kindergartens—a public and a private one—

were chosen randomly for the field study, and their sustainability components were analyzed. To guarantee that the environmental conditions (topography, climate, etc.) were comparable, great care was taken to ensure that they were situated in the same region during the selection process.

2.3.2. Selçuklu Municipality Sabir Kindergarten in Konya/Selçuklu

The Selçuklu Municipality Sabir Kindergarten is located at Alim Street No. 38 in the Yazır District. The academic year 2019-2020 has started and the kindergarten currently has 380 enrolled pupils aged between four and five. The facility employs a total of twenty-four staff members, including sixteen teachers, two administrative managers, and six support staff members (Figure 5).



Figure 5. Location and entrance facade of Selçuklu Sabir Kindergarten (Google Map,2023; Sungur, 2023)

The school covers a land area of 2850 square meters, out of which 950 square meters are green areas. This amounts to an average of 3 square meters of green space per student. The entrance is located in the south, and the building has a rectangular shape running in the north-south direction. The school has three floors: basement, ground, and first floor. In the basement, there is a warehouse, a water tank, a natural gas installation room, an electrical room, a science workshop, a prayer room, an ablution room, a multi-purpose hall, and a music workshop. On the ground floor, there is an information desk, three classrooms, a library, a deputy principal's room, a dining hall, and a kitchen. Additionally, you can access the garden through the door next to the kitchen area. On the first floor, there are five classrooms, an art workshop, a principal's office, and a guidance service. Each floor has a toilet for the disabled, in addition to separate student toilets for boys and girls. The school's heating is provided by a central heating system, which uses floor heating (Figure 6).



Figure 6. Immediate surroundings and floor plan of the building (Graphical arrangement belongs to the author)

Outdoor Features

The building is surrounded by garden walls on all four sides. The neighborhood has four to five-story residential buildings, a recreational area, and a market area. The building can be accessed via a six-

step staircase or a disabled ramp. Even though it is near a public transportation route, the school administration stated that the majority of students come to school by private vehicles. The car parking area is located outside the building boundaries. Some parts of the exterior of the building have soil/grass playgrounds and asphalt playgrounds designed. Outdoor areas include wooden play equipment, plant planting, and an animal care area. The recreation area adjacent to the school is also used for various activities. Previously, there were chickens in the animal care field, but they are no longer available. The planting area has different types of plants, and they are grown using the drip system. A rainwater collection system has been created for garden irrigation to save water. Solar panels were included in the project planning phase, but they are not available due to their high cost (Figure 7a, 7b, 7c, 7d).



Figure 7a. Recreation area and parking area in the immediate vicinity



Figure 7b. Outdoor seating area and green texture



Figure 7c. Plant growing and animal care area



Figure 7d. Stairs and ramp providing access to the building, rainwater collection tank, wooden play equipment

Figure 7. Different images of outdoor spaces (Sungur, 2023)

Classrooms/Workshops, Common Areas

Space in classrooms can be arranged to suit a variety of activities. In preschool education spaces, workspaces created using a flexible space approach are essential. The ground-floor and first-floor

classrooms and workshops have windows that let in natural light and air. In locations where wooden furniture is the primary type of furniture, plastic-based materials are also present. Although parabolic lighting is typically used in surface-mounted lighting applications, pendant lighting is also utilized in some locations (Figure 8)



Figure 8. Images from the classrooms/workshops located on the ground and first floors (Sungur, 2023)

Artificial lighting features are used to provide education in the science workshop located on the basement floor, the music room, the museum corner, and the mathematics street. Children are deprived of natural ventilation and daylight when windows are absent (Figure 9).



Figure 9. Images from the classrooms/workshops and halls on the basement floor (Sungur, 2023)

All floors' wet areas are equipped with nothing to conserve water. To maximize natural lighting and ventilation, the dining room and kitchen should be situate on the ground floor. The classroom hallways' lengthy and narrow layout means that natural light is inadequate and must be supplemented by artificial lighting. After being evaluated for its work under the Eco School Project, Selçuklu Municipality Sabır Kindergarten was awarded the "Green Flag Award" for its efforts in the Eco School, Forest School,

Seed Bank, and Zero Waste projects. To encourage students' awareness of recycling, a designated area has been established within the school where various waste types are gathered (Figure 10).



Figure 10. Images from wet areas and corridors (Sungur, 2023)

2.3.3. Private Ekolojik Kültür Kindergarten in Konya/Selçuklu

The Private Ekolojik Kültür Kindergarten is situated on Hisim Street No:10 in the Buhara District. The school welcomed its first batch of students in the academic year 2020-2021, catering to children aged between 3 to 6 years. Currently, the school has a total of 120 students and 19 employees, including 12 teachers, 1 manager, 1 accounting personnel, and 5 assistant staff members (Figure 11).



Figure 11. The Private Ekolojik Kültür Kindergarten's location and entrance facade (Google Map, 2023; Sungur, 2023)

The school is built on a land area of 1917 m² and has a floor area of 586 m², spread over three floors. The basement floor covers an area of 488 m², while the ground and first floors are both 586 m². The school's total closed area is 1660 m². The front garden measures 450 m², while the side and backyard gardens together cover 855 m², making the total garden area 1305 m². There is an average of 10 m² of green space per student. The building has a rectangular shape in the north-south direction and houses a total of 16 classrooms, including 12 classrooms that are 30 or more m² in size, and 4 workshops that are 20 m² each. The school has four different sections, including a 180 m² gym, a 200 m² dining hall, a 150 m² sleeping room, and a 40 m² dream room. The school is heated by a central heating system with floor heating (Figure 12).



Classrooms/Workshops, Common Areas

Workshops and classrooms can be set up to accommodate activities that promote children's development. Wood is used for fittings and furnishings. To take full advantage of natural light, the windows reach the floor. Even with laminate flooring, non-slip play mats and antibacterial floors can create limited space in classrooms and workshops. When it comes to energy efficiency, using suspended ceiling LED luminaire lighting is crucial. The basement floor's hand washing station, dining hall, sleeping room, and sports and gymnastics hall all have artificial lighting, but band windows help partially meet the building's natural light and ventilation requirements (Figure 14).

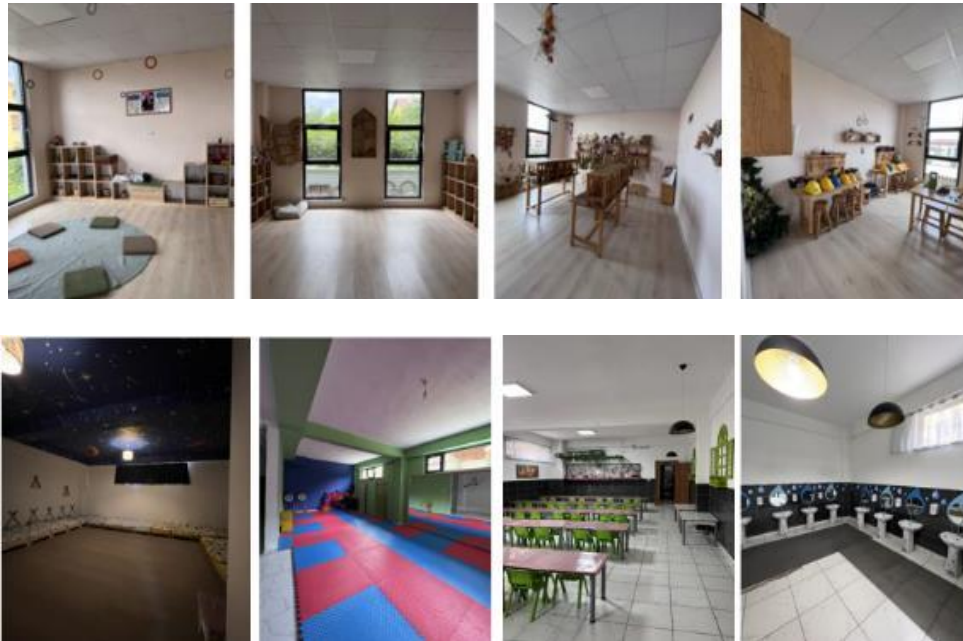


Figure 14. Images of the classrooms on the ground and first floors, as well as the sleeping room, gym and cafeteria area on the basement floor, respectively (Sungur, 2023)

All floors' wet areas are equipped with nothing to conserve water. The classroom-to-courtyard corridors are open to a courtyard illuminated by roof lanterns, providing ample natural light throughout. The translucent surfaces of the classrooms that face the courtyard play a major role in letting in natural light from the outside and the roof lantern. The courtyard, which is heavily used as a space for social interaction, is supported by greenery. In addition to connecting the corridors, the first-floor wooden bridge gives the building a distinct viewpoint (Figure 15).



Figure 15. Images of the meeting area with roof lanterns and the wet area in the middle axis of the building (Sungur, 2023)

The Private Ekolojik Kültür Kindergarten's mission of "a living school for generations that produce, not consume" led to the adoption of the ecological approach during the building's design process. Budgetary constraints prevented the installation of solar panels on the roof, despite their inclusion during the project phase. Children felt like they were a part of nature when the classes were named after natural phenomena, such as the sun, ocean, spica, water, soil, and bud. Additionally, it works well

to raise awareness that not all trash is waste by placing recycling bins at strategic locations throughout the hallways. Herbarium applications are noteworthy for being placed on hallway wall surfaces so that students can identify the plants. These applications give students the chance to see and examine plants at any time of year (Figure 16).



Figure 16. Sun, Ocean, Spica, Water, Soil, Bud Class labels and images of ecological approach (Sungur, 2023)

3. Findings and Discussion

As part of a field study, the sustainable preschool education structures of two kindergartens—one run by the state and the other by a private organization—were compared. Several conclusions were drawn from the measurements, photos, and observations that were made, along with teachers and manager interviews. These findings are tabulated according to ecological, social and economic sustainability criteria (Table 3-4)

Table 3. Evaluation of Selçuklu Municipality Sabir Kindergarten with Sustainable Components (Created by the Author)

EVALUATION OF SELÇUKLU MUNICIPALITY SABIR KINDERGARTEN WITH SUSTAINABLE COMPONENTS		
ECOLOGICAL SUSTAINABILITY	Selecting the Residential Area <ul style="list-style-type: none"> The building is situated in a central area The building's integrated use with the existing park area on the adjacent parcel expands the green area's size The building is situated in a low-noise area. 	Transportation <ul style="list-style-type: none"> The building has made arrangements for alternate modes of transportation Parking spaces are positioned near the road, away from kid-friendly play areas.
	Energy and Atmosphere <p>Regarding the building's energy production from renewable energy sources, no data was discovered.</p>	Natural Ventilation and Natural lighting <ul style="list-style-type: none"> Artificial lighting is intended to support natural lighting. Applying light colored paint to the areas. By incorporating open and closeable joineries into every building design, controlled natural ventilation is made possible.
	Water Conservation <ul style="list-style-type: none"> Local plants that don't need a lot of irrigation were carefully chosen. Efficient irrigation techniques were employed to collect and utilize rainwater for landscape irrigation. As a result, less clean water is being used for irrigation. 	
SOCIAL SUSTAINABILITY	<ul style="list-style-type: none"> Encouraging societies to actively participate in the process of designing their own living spaces User mobility adds life to the immediate surroundings. Educating people about the future generations' access to natural resources. Recognizing the wants and needs of society. The structure aids in the city's promotion. Preserving diversity in social and cultural contexts. Preserving the linkages among social organizations. Congruent design with surrounding context. 	
ECONOMIC SUSTAINABILITY	Space Organization <ul style="list-style-type: none"> Creating thermal zones within the building by grouping areas that are used for similar activities. Standardization can be attained by evaluating the project using the grid system. Designating a space in the school garden where kids can nurture plants and interact with, feed, and learn about animals. The building's ability to take advantage of natural light coming from all directions. 	

	Building Shell and Orientation	
	<ul style="list-style-type: none"> The windows and external surfaces of the building have been equipped with thermal insulation. The double layer design of the glasses stops heat loss. 	
	Material Selection	Building Form
	<ul style="list-style-type: none"> The building was built with reinforced concrete carcass system. Furniture is produced with wooden material. 	The building was designed in a rectangular form with a simple and plain geometry.

Table 4. Evaluation of Selçuklu Municipality Sabır Kindergarten with Sustainable Components (Created by the Author)

EVALUATION OF ECOLOGICAL CULTURE KINDERGARTEN WITH SUSTAINABLE DESIGN CRITERIA		
ECOLOGICAL SUSTAINABILITY	Selecting the Residential Area	Transportation
	<ul style="list-style-type: none"> The existing land was preserved and the design was made to suit flat land conditions. Due to the low-rise residential structure around the building, it is located in an area where the noise level is low. Sufficient lighting is provided around the school. 	<ul style="list-style-type: none"> Transportation axes are established, and vehicles, pedestrians, and bicycles can all enter the building. The parking lot is situated away from playgrounds for kids and next to the road. In this manner, children are shielded from the negative effects of traffic pollution while safety is guaranteed.
	Energy and Atmosphere	Natural Ventilation and Natural lighting
	<ul style="list-style-type: none"> There is no data on energy production from renewable energy sources in the building. 	<ul style="list-style-type: none"> The design incorporates sky windows to facilitate natural lighting. Using floor to ceiling glass in the classroom design to maximize natural light. Applying light colored paint to the areas.
SOCIAL SUSTAINABILITY	Water Conservation	
	<ul style="list-style-type: none"> Rainwater collected on the roof provides the necessary water for landscape irrigation. 	
	<ul style="list-style-type: none"> Encouraging societies to actively participate in the process of designing their own living spaces User mobility adds life to the immediate surroundings. Educating people about the future generations' access to natural resources. Recognizing the wants and needs of society. The structure aids in the city's promotion. Preserving diversity in social and cultural contexts. Preserving the linkages among social organizations. Congruent design with surrounding context. A sign encircling the structure 	
ECONOMIC SUSTAINABILITY	Space Organization	
	<ul style="list-style-type: none"> The large hallway that runs the length of the building serves as a social hub in addition to connecting the classrooms. The interior dividers are completely composed of glass blocks, which allow teachers to visually connect spaces and keep an eye on the students. The building's facades are constructed with floor-to-ceiling glass, which lets natural light into the interior spaces even on cloudy days. Creating visual connections between floors and using galleries to let natural light into the interior. Designating a space in the school garden where kids can nurture plants and interact with, feed, and learn about animals. The building's ability to take advantage of natural light coming from all directions. 	
	Building Shell and Orientation	
	<ul style="list-style-type: none"> The windows and external surfaces of the building have been equipped with thermal insulation. The double layer design of the glasses stops heat loss. 	
	Material Selection	Building Form
<ul style="list-style-type: none"> The structure was constructed using a reinforced concrete carcass system Wooden materials are used in the production of furniture. 	<ul style="list-style-type: none"> The building's geometry is straightforward and simple, with a rectangular shape. 	

Researchers who studied sustainable preschool education structures in literature sources gathered and tabulated the sustainable preschool education structure criteria they had established. By designating the criteria in the table as present, partially present, or absent in the schools under investigation, they could be compared (Table 5).

Table 5. Sustainable Preschool Education Structure Criteria (Dorsey & L'Es-perance, 2000; Ramli et al., 2012; Göktekin, 2015; Kocabaş & Bademcioğlu, 2017 studies were used).

Sustainable Preschool Education Structure Criteria	Schools in Field Study					
	Selçuklu Sabır Kindergarten	Municipality Kindergarten	The Private Kindergarten	Private Kindergarten	Ekolojik	Kültür
Appropriate Location Selection		●			●	
Alternative Transportation Option		●			●	
Ease of Maintenance and Use		○			●	
Passive Energy System (Trombe wall, solar chimneys, etc.)		○			○	
Active Energy System (Solar collectors, photovoltaic systems, etc.)		○			○	
Rainwater Collection System		○			○	
Indoor Air Quality						
Daylight		●			●	
Natural Ventilation		●			●	
Acoustic Comfort		●			●	
View		●			●	
Disabled/Barrier-Free Access		●			●	
Security (Single Story status)		○			○	
Outdoor playground		●			●	
Area to recognize and feed different types of animals		●			●	
Area to recognize and grow different types of plants		●			●	
Policies for Recycling		●			●	
Education Policies Regarding Sustainability		●			●	
Environment Contribution to public awareness		●			●	

● (Available- 1 point) ● (Partly Available -0,5 point) ○ (Not Available - 0 point)

The land in both schools permits the desired orientation with the right location choices, and there is no barrier to light and natural illumination entering the building. It is the process of reducing the amount of energy used for transportation and the negative effects it has on the environment by making public transportation, walking, and other non-private vehicle modes of transportation more popular. The bulk of kindergarten students are transported by private vehicle, with only a small percentage using public transportation. Thus, some coverage is provided for alternate modes of transportation. Materials and products that do not require much maintenance and repair are not preferred in Sabır Kindergarten and are partially available in Private Ekolojik Kültür Kindergarten. Although Private Ekolojik Kültür Kindergarten's basement floor has band windows for natural light and ventilation, Sabır Kindergarten's basement uses only artificial lighting, which uses a significant amount of energy. There isn't a roof garden, but both kindergartens have systems in place to collect rainwater. The lack of windows on the basement floor of Sabır kindergarten has a negative impact on indoor air quality, even though schools are low-rise structures with a green neighbourhood feel. It was determined that both buildings' disabled ramps were appropriate for disabled access. Although Poyraz & Dere (2003) emphasize that preschool buildings should be single-story structures, the three-story schools in the sample are unsuitable for young students. For pre-school education, school gardens should be planned with an area of 3 m² per child, according to the Ministry of National Education Regulations (Poyraz & Dere, 2003). The outdoor garden space at Sabır Kindergarten is adequate, albeit

restricted to one child per household. The outdoor garden area at the Private Ekolojik Kültür Kindergarten is sizable, providing ample opportunity for learning about various animal and plant species and experiencing nature firsthand. Recycling policies have been adopted and put into effect by both schools. While Sabır Kindergarten partially implements sustainable education policies, the other's primary goal is to achieve this. The public's awareness is also enhanced by regularly getting together with the families of students for various activities that take place outside of the building's designated learning times. As a result, the school is crucial to the area's symbolic development. The Ekolojik Kültür Kindergarten has been reported to regularly conduct ecological activities involving family participation, while reports have indicated that the Sabır Kindergarten's large student body limits such interactions. As a result, in the comparison between the two schools, available features were quantified as 1 point, partially available features were evaluated as 0.5 points, and non-available features were evaluated as 0 points. Compared to the Selçuklu Municipality Sabır Kindergarten (11 points), the Private Ekolojik Kültür Kindergarten's ecological criteria (14 points) exhibit more ecological characteristics.

As a result of the study findings, determining the general characteristics of a sustainable school is important for developing and building a sustainable school design, which coincides with the study of Ramli et al., (2012). The idea that adapting sustainability criteria and applying them in kindergartens will reduce energy consumption as well as provide a comfortable environment for users is similar to the research of Al-Mashaqbeh (2022). Although the idea of building sustainable new buildings is not very common in our country, it is similar to the result obtained by Sivri Gökmen (2012) that it is important to raise awareness about the improvement of existing buildings and to include the concept of sustainability and its requirements among the design criteria in new school buildings.

4. Conclusion and Suggestions

Educational structures are a crucial component of a healthy and prosperous society. Research supports that ecological design can have a significant impact on education, and there is mounting evidence that the quality of a student's learning experience is closely connected to the environment in which they learn. The primary objective of ecological schools is to provide high-quality environmental education to children, with the ultimate goal of finding sustainable solutions to environmental issues in the future. Additionally, these schools aim to increase awareness among students about the efficient use of energy resources such as water, electricity, and natural gas. Finally, another critical objective is to ensure that students receive education in a healthy environment. To create an environmentally conscious society, individuals must have a thorough understanding of the environment in which they live. Early childhood education is the key to achieving this goal, which is why it is essential to establish and implement sustainability standards for preschool education buildings. Pre-school education should be given the necessary attention, and educational buildings should be designed and improved to be more ecologically sustainable.

In Turkey, the residential and office sectors have been the only ones to adopt sustainable architecture; educational buildings have not kept up with these developments. In terms of educational structures specifically, our nation is still gathering and processing data at a conceptual level. According to research, there are remarkably few preschool education structures in our nation that hold sustainable evaluation certificates. Therefore, to have ecological kindergartens, it is emphasized in this study that designers, engineers, and politicians must figure out why proposals for ecological improvement or renewal are not made. This can be done by identifying the sustainable potential features of current kindergartens.

After conducting the research and interviews, it was found that the economic resources available play a significant role in the ecological differences between the structures that were examined. Public schools are given an inadequate budget, and sustainability is not given much importance, resulting in fewer sustainable practices. Private schools, on the other hand, have more financial resources at their disposal, allowing them to shape their physical structures and achieve sustainability. It's important to note that constructing a new building requires more energy than evaluating an existing one. Therefore, building new educational buildings with a sustainable architectural approach and identifying the potential for ecological improvement in existing buildings is crucial for increasing environmental

awareness in society. In our country, it's essential to increase the number of legislation and political regulations that consider renewable energy sources in different types of buildings, particularly educational buildings. This will allow for the choice of environmentally friendly materials and systems, promoting a cleaner environment and society.

As a result of these evaluations, the following suggestions can be made for improving existing preschool education structures ecologically:

- Considerable efforts should be made to increase the use of public transportation and foot traffic.
- The layout of the school garden should help kids comprehend the natural world and their own existence. They should also be able to learn about environmental characteristics, discover their physical and emotional well-being, and engage with society.
- Given the rapidly growing residential areas' artificial environmental conditions, these gardens—which serve as the majority of children's first natural intersection—should be planned to accommodate a variety of play tools for varying developmental stages.
- Creating a garden with a variety of plant species and placing shelters to provide food for different animals will improve the bond between children and nature.
- Adaptable Classroom settings should be designed to support kids' physical, mental, emotional, and social needs.
- It is crucial to take into account the usage of both active and passive energy systems.
- Water conservation should be guaranteed by applying a green roof
- Photovoltaic panels and solar collectors should be used to harness solar energy within the building.
- Water consumption can be minimized by making sure that the building and furniture materials are eco-friendly and simple to clean.
- Steps should be taken to improve the quality of the air indoors (natural ventilation, daylight, acoustic comfort, view).
- Garden areas should be irrigated with rainwater collected outside the building.
- It is best to use equipment with sensors that can cut down on water use in wet areas.
- To increase ecological and environmental awareness, family-friendly joint activities should be planned with the primary goal of educating students and their families.
- The preschool education building ought to be transformed into an environmental symbol within its surroundings.
- It is vital to establish and distribute fundamental standards for sustainable and architectural design in educational buildings.

In summary, the study highlights the need for political, economic, technological, and cultural infrastructures to be in place in educational buildings so that early childhood learners can experience a physically suitable learning environment and internalize the idea of sustainability. Once more, even though studies articulate the design principles for sustainable educational buildings, assessing the prospective sustainability status of current buildings and making recommendations in line with that assessment demonstrates the significance of the study in the scientific community. In this sense, assessing the current structure rather than constructing a new one is a tiny step for the global community but a significant step for ecological life.

Acknowledgements and Information Note

Ethics Committee approval was not required for the study. I would like to sincerely thank Selçuklu Municipality Sabır Kindergarten principal Sevil ESMER and Ekolojik Kültür Kindergarten principal Melek ER BOZKURT for their contributions to the study. This article was presented orally and published in summary at the 3rd International Architectural Sciences and Application Symposium (IArcSAS-2023) held in Napoli-Italy. The article complies with national and international research and publication ethics. Ethics Committee approval was not required for the study.

Author Contribution and Conflict of Interest Declaration Information

The article has a single author and there is no conflict of interest.

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