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The Role of Environmental and Geographical Factors in the Education Process

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Abstract

Humans have continuously learned and acquired diverse skills and knowledge from their surroundings throughout history. Therefore, the importance of a suitable and standardized educational environment for learning and teaching is undeniable. The educational environment has a significant effect on students' learning process, and the teaching staff must have a thorough understanding of the environmental factors that impact this process to create an optimal learning environment for students. Environmental elements play a crucial role in learning environments, as they encompass a variety of factors that collectively contribute to the creation of meaning and value. The characteristics and qualities of each of these elements influence the formation of learners' behaviors.

Education and educational environments have the greatest influence on the mindset and civilization of societies. Improving the structure of education requires the creation of learning environments that cater to the needs of learners. These environments should provide suitable and favorable conditions for the physical, mental, emotional, and social development of children. It is possible to achieve this goal by designing spaces in detail based on children's behavioral patterns.

Research shows that the study of children's behavioral patterns in educational environments has focused on factors such as classroom size and lighting, which play a crucial role in enhancing the learning process. This article was prepared with the aim of investigating the role of environmental and geographical factors in the educational process. During this research, we will attempt to answer the primary question of how environmental and geographical factors impact the educational process. In addition, the educational environments and conditions will also be examined, and the factors that contribute to creating suitable educational spaces will be analyzed.

Keywords: *environment, education, school, teacher, geography, university*

Introduction

In this regard, enhancing environmental awareness and promoting sustainable practices can help improve this situation (Mahmoudi, 2013: 40). The education organization, as one of the fundamental institutions in every society, plays a crucial role in shaping the social and cultural future of individuals and societies(Prainsack and Buyx 2018). This importance and fundamental role of education in societies requires the provision of appropriate resources and infrastructure to facilitate the education process completely and without any new problems and to create a positive impact on societies (Engelbrecht, 2013). The role of the environment and geographical factors in education is considered important in influencing the educational process and the performance of learners. Also, environments that lack sufficient educational facilities and equipment can hinder the ability to learn and negatively impact learners' performance (Jamieson et al., 2020). The geographical factors of the place of residence also influence education. Rural and remote areas may face challenges in accessing schools and educational resources, which can negatively impact their education(Mahdavi Ardestani, Adibi et al. 2023).

Cultural diversity: Environments with high cultural diversity can present challenges in the education process. Cultural differences may cause problems in interpersonal and cross-cultural communication, which can consequently impact the learning process(Liu, Song et al. 2022).

The natural environment of the area may impact the educational programs. In rural and mountainous areas, learners may encounter challenges related to accessing educational resources and transportation(Shim, Kim et al. 2018). These issues can have a significant impact on various aspects of education (Rezaian, 2016). Weather: Weather conditions can have a direct impact on education. In regions with extreme and inhospitable weather conditions, such as hot and arid or cold and snowy areas, schools may encounter challenges in terms of ensuring proper ventilation, heating, or cooling systems. These issues can have an impact on the academic performance of students (Shojaei, 2018).

Economic factors can also play an important role in education. The inability to provide books, educational tools, and modern technology can hinder learners from fully enjoying balanced educational opportunities (Sami Azar, 2016). In general, environmental and geographical factors can have both direct and indirect effects on the education process. Designing appropriate educational environments, taking into account the needs of different regions, and providing equitable educational opportunities for all learners can be effective in enhancing the quality of education and improving learner performance(Hughes, Ofstad et al. 2022).

Research Methodology

In this research article, reliable sources, and quantitative and qualitative research methods have been used to accurately examine the role of environmental and geographical factors in the education process. In the quantitative research method, researchers have utilized standard questionnaires and appropriate scales to analyze the experiences of individuals about the impact of environmental and geographical factors. Statistical analysis has been conducted, and the data has been carefully interpreted according to valid criteria. To enhance the level of detail and depth in the research, the qualitative research method has also been utilized. Content analysis has been applied to books, scientific articles, and specialized resources related to the subject. This analysis has enabled the examination of patterns, concentrations, and effects of various environmental and geographical factors in the field of education and training. In addition, in-depth interviews were conducted with specialists and experts to gather their opinions and insights in this field.

For the information-gathering stage, library sources and scientific articles from reputable sources in the fields of education and geography have been utilized. The selection of sources has been carried out carefully, taking into account the significance of the research topic and the information required for a more precise interpretation of the results.

By combining quantitative and qualitative research methods, researchers have comprehensively analyzed the role of environmental and geographical factors in the education process. The research results have been explained reliably and accurately.

Literature Review

(**Wu et. al., 2019**) drive forces of the changing distribution of pollution-intensive industries (PIIs) in the Yangtze River Delta (YRD), **China** from 1999 to 2015. (**Wu et. al., 2019**) provides China's evidences about the co-existence of the PHH and the PH, and can advance the understanding of the restructuring process and mechanism of PIIs at finer geographical scales. The role of **higher education** is essential for providing future professionals with the necessary profiles to respond to the **sustainability** challenges in increasingly complex and global contexts. For that reason, the aim of (**Eizaguirre et. al., 2019**) is to determine which are the sustainability core competencies, considering three different geographical regions (**Europe**, **Latin America**, and **Central Asia**), and the perspective of four different stakeholders (graduates, employers, students and academics). The aim of (**Szubert et. al., 2019**) is to examine if the negative image of the Conurbation is grounded by the textbooks for **geography** for **secondary schools** in **Poland**. The results prove the role of the textbooks and the whole school education as factors shaping the image of particular places that people have also as adults. (**Roszkiewicz et. al., 2019**) attempt to summarize recent data regarding **environmental factors**, together with epigenetic markers and processes playing an important role in **psoriasis**. The correlation between **pathogenesis** of psoriasis and environmental risk factors, together with epigenetic alternations still require more investigation. The elaboration of environmental sustainability indexes (ESI) aims to describe the complexity between social, environmental and ecological health. These indexes play a crucial role by helping stakeholders during the decision-making process and by identifying possible sites that require practical sustainable actions. In this aim of (**Couto et. al., 2020**) to elaborate an ESI for hydrographic basins. It should involve knowledge about education for responsible consumption in order to care for the environment both individually and socially. Considering this, the purpose of (**Estrada-Vidal et. al., 2020**) is to find out whether there are differences in the level of awareness and the habits of future teachers of **Early Childhood** and **Primary Education** regarding sustainable social responsibility. They consider education to be the main factor for sustainability, while society is ranked as the least important, observing an evident disagreement in relation to environmental and economic factors (perception of **collective responsibility**; Early Childhood versus Primary Education students). The geographically weighted regression analysis shows that the economic development level,

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medical conditions, demographic structure, **natural environment**, and city attributes all affect the distribution of **life expectancy**, but that their effects have significant spatial heterogeneity (**Huang et. al., 2020**). For the eastern developed areas, special attention should be paid to **environmental protection** in the economic process, while striving to achieve high-quality development. (**Thompson et. al., 2021**) present an analytical framework theorising how geographical variations in (1) institutional frameworks, and (2) actor capabilities, dictate which institutions actors attempt to change. (**Thompson et. al., 2021**) show institutional change to be a geographical and contextual process that requires actors to match the right types of **institutional work**, with the right mechanism of institutional change, and a suitable target institution if they are to be successful in effecting change. Improving fertilizer use efficiency (**FUE**) is an effective means to reduce fertilizer use and environmental contamination. (**Bai et. al., 2021**) discuss the spatial distribution and characteristics. Many educational institutions have instructed their students through remote learning technologies to face the effect of local closures and promote the continuity of the education process. (**Abumalloh et. al., 2021**) examine how push, pull, and mooring variables impact learners to switch to virtual and remote educational laboratories.

Research findings

Components of Educational Geographic Environment

In this article, the effectiveness of physical factors in the school environment on teachers and students is discussed. Factors such as temperature, light, air quality, and excessive noise have negative effects on concentration, mood, well-being, health, attendance, and ultimately, success (Higgins, Hall, Wall, Woolner, & McCaughey, 2005(Edgerton and McKechnie 2023)). Many studies have been conducted regarding the effect of physical factors in educational spaces on learners' attendance, absence, and well-being (Earthman, 2004). The best guidelines for designing educational environments emphasize the influence of specific elements of spatial quality and physical factors (including space, light, color, sound, materials, etc.) on student progress and learning (Berris & Miller, 2011).

Based on research on vertical space, such as height, studies have shown that low ceilings harm children's cooperative performance and sense of participation. On the other hand, high ceilings promote diverse experiences and social information exchange (Reed, Segawa, & Rant, 1999(Dai, Zou et al. 2022)). The lighting should be suitable for the intended activity, and the space should provide both natural and artificial light to accommodate different tasks and needs. Color can also create a sense of place, provide information exchange, and create spatial orientation cues (Willard et al., 2018).

The light

The type of interior lighting and the intensity of the light are also important and depend on the color. Research shows that the visual environment has a significant impact on the learner's ability to comprehend visual stimuli. Also, lighting conditions can affect a person's mental attitude and performance(Peng, Weng et al. 2022). According to studies, lighting conditions that harm mental attitude and performance can weaken performance, while lighting conditions with a positive effect can improve performance (Higgins, Hall, Wall, Woolner & McCaughey, 2005). Having natural daylight in the classrooms is vital for the learning processes of students. Natural light and the presence of windows on both sides of the classroom provide the opportunity to see outside the walls of the classroom and give the eyes a chance to rest(Nolé, Higuera-Trujillo et al. 2021). However, it is necessary to be careful that the light should not be dazzling, and the reflection of the light should not bother the users' eyes (Mahmoudi, 2019).

Color

Color is an important factor in both physical and virtual learning environments, as it greatly impacts the success of learners and the performance of teachers and staff. When discussing color in schools and educational spaces, the choice of color is important from both a functional and aesthetic perspective(Sarkio, Korhonen et al. 2023). Research shows that vibrant colors are more suitable for young learners, while muted colors are more appropriate for teenagers. Research in the field of color psychology and its effects yields contradictory results, and therefore, further studies in this area are recommended (Higgins, Hall, Wall, Woolner & McCaughey, 2005). For example, research has shown that the color of walls in classrooms can affect efficiency and accuracy. Experiments have shown that in classrooms painted with the student's preferred color, fewer errors occur, and the time to complete tasks changes imperceptibly (Sandstrom, 1987).

Therefore, in schools, it is important to carefully select the colors of spaces and educational equipment, considering the heightened sensitivity of children and teenagers(Siebelink, Verhagen et al. 2017).

Heat

Providing thermal comfort as a physical and mental necessity is crucial in educational environments. This field has also attracted a lot of research(Kim and Brown 2022). In this regard, Earthman (2004) identified the amount of heat, heating, and air quality as crucial factors for the success of learners. Two separate studies have also highlighted the significance of these factors. In a report discussing the specific requirements of American schools, Fisher (2001) and Schneider (2002) also highlighted the beneficial impact of these factors on students' behavior and performance (Higgins, Hall, Wall, Woolner & McCaughey, 2005). Therefore, heat, the heating system, and air quality are known as essential components in the physical environment of the school, which have a significant impact on students' success (Earthman, 2004).

Materials and Textures

Providing diversity in textures and materials in educational environments is crucial and essential. When selecting materials, it is important to consider the location of use and the environmental conditions in which the activities will take place(Chen, Luo et al. 2020).It is highly desirable to use soft textures, especially in areas that are intended for peace, quiet, or rest. On the other hand, hard surfaces are suitable for areas where learners engage in numerous activities, as they are less likely to deteriorate over time(Van der Linden, Leys et al. 2017). The use of soft textures and natural, diverse, and aesthetically pleasing materials helps students to relax and is appealing to them. For example, the use of wood creates a calm and pleasant environment for learners, while stone, brick, and soft coverings with vibrant colors create a special attraction for them (Mohdi Sepideh, 2018).

According to Edward, factors such as color, softness, roughness of surfaces, and other decorative elements have a significant impact on the performance of educational environments, as well as on the emotions and mood of learners. A small change in these factors can enhance educational environments, making them more appealing and desirable (Rehbari Menesh & Rahmatizadeh, 2013).

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Spatial Organization and Arrangement

One of the important aspects of educational environments is the arrangement of students' desks and chairs, as it can have an impact. The research conducted by Vidal and his colleagues demonstrated that the arrangement of chairs and tables has a significant impact on the accuracy and success of learners. Additionally, these changes result in increased participation of learners in class discussions and questions(Bell and Foiret 2020). Managing the arrangement of rooms is especially important due to their different purposes. Likewise, flexibility in the design of classroom space has also been emphasized as an important factor in improving the quality of education (Bemis & Miller, 2011). Parents play an important role in assessing the atmosphere and emotions within it. Research shows that large spaces can allow learners to work individually and reduce noise(Tafjord 2021). This suggests that flexibility in physical space can lead to positive interactions between teachers and learners (Higgins, Hall, Wall, Woolner & McCaughey, 2005).

In general, it is important to consider different layouts and arrangements of educational environments flexibly to align with various learning goals and needs.

Proportions and scale

If the size of the space and its elements are suitable for the learners, they can easily utilize the spaces and equipment that are relevant to them. For example, the research conducted by Arntzen and Evans in 1984 demonstrated that classrooms with high ceilings may harm the intelligence and alertness of both teachers and students(Gitschthaler, Erling et al. 2022). Furthermore, the height of the ceiling is a significant factor in determining teachers' satisfaction with the classroom. Due to the variation in size among school students, it is important to consider the suitability of furniture concerning the size of children. Green space and the integration of the natural environment both inside and outside of schools are among the most effective factors in improving student conditions and enhancing the school environment(Jin and Peng 2022). Measures have already been taken in this direction, and it is important to continue these efforts. Research shows that in addition to the positive spiritual and mental effects on students, the experience of growing plants and taking care of the soil can bring significant benefits to students in their future lives (Siegel, 2019). In this regard, it is crucial to integrate the external natural environment with the internal environment. With simple measures such as optimizing sun orientation, utilizing natural light to conserve energy, ensuring proper ventilation, and facilitating effective communication between indoor and outdoor spaces, the educational environment can foster green, healthy, and natural spaces(Andalib, Faghani et al. 2022).

Physical Factors Affecting Learning

The physical factors related to educational environments and their impact on learning are categorized and explained in the following sections(Jin and Peng 2022).

1. Light and its related factors, such as the amount, intensity, and type of natural or artificial light.
2. The overall dimensions of the classroom, including the walls, doors, and floors, in terms of area and space per person.
3. Color and Its Effect on Education and Educational Environments.
4. Heating and ventilation of the workshop.
5. The voice and factors related to the organization and arrangement of the guild.

In the continuation of the previous material, (Metalabi (2010) investigated these factors and their influence on the teaching-learning process.

Light and its related variables in the learning process. 83% of learning takes place through the sense of sight. Of course, we must remember that the amount of light needed varies depending on the activity (Dillon, 2021). The classroom is illuminated by natural light coming from windows, vents, and other sources. Therefore, the surfaces of the walls and ceiling of the classroom should be light in color, while the floor should be dark (Berris, 2011). Regarding the layout of the classroom, it is suggested that a rectangular shape with a trapezoidal area is the most suitable design. Therefore, when choosing a location for the class, it is important to consider the class size and the number of students (Shuja'i, 2008). C - Color and Its Effect on Education and Educational Environments

Color, as an inseparable element of architecture, has a significant influence on the spirit and behavior of the occupants of spaces and buildings, greatly impacting their psychological and emotional state(Cho and Suh 2020). Humans observe the surrounding phenomena through color and react to them. These colors have a significant effect on controlling emotions and promoting mental well-being. In addition to creating a calming environment, they also help reduce potential accidents among students. Warm colors, such as red, orange, and yellow, should be used in hallways, sports facilities, and dining areas(Schleifer and Tamir 2023). The school provides an environment for the development of students' talents and self-awareness. As students have diverse interests and talents, the educational environment should be designed to foster these talents and uphold the true essence of education (Pourjafari, 2017).

Discussion

Environmental and geographical factors in education play a significant role in shaping the teaching and learning process. Below, we will outline some of the roles and effects of these factors(Cavanagh, Kimber et al. 2023). The Effect of the Physical Environment: Educational environments, such as schools, universities, classrooms, and laboratories, can have a significant impact on learning and the overall educational experience(Jin and Peng 2022). For example, calm and pleasant environments can help learners to focus and learn better. The Influence of Geographical Location: The geographical location of schools and educational institutions also plays an important role in learners' and educators' access to educational environments. Using environmental resources such as nature, gardens, farmland, and natural areas can help create unique learning experiences. The influence of culture and local communities: The culture and values of local communities also play a role in shaping educational programs. Adapting educational programs to the culture and needs of the local community can foster a stronger connection between learners and the educational environment(Van Eck, Gullett et al. 2021).

The geographic diversity of different regions plays an important role in determining the opportunities and challenges in teaching and learning. Educational programs should be designed according to the needs and conditions of different regions to enhance the

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quality of education and create optimal learning experiences (Owens, Sirven et al. 2019).

The environment, as mentioned, refers to the living space of humans or, in other words, the physical space surrounding human beings. From the obtained data, several issues related to the quality of educational buildings have emerged, with a focus on the interaction between the environment and the building's users(Appolloni, Dettori et al. 2020). In this context, the following physical components were mentioned: light, color, sound and acoustics, heat, materials and texture, spatial organization, arrangement, proportions, scale, green space, and integration of the natural environment indoors and outdoors. Therefore, physical components in an educational environment are powerful tools that can have indirect and imperceptible effects on the behavior of learners, teachers, administrators, and other employees(Levandoski and Zannin 2022).

Therefore, it is suggested to give special importance to the design of educational spaces to facilitate critical thinking and active learning. The educational environment should be designed to generate greater interest and motivation in learners compared to other environments.

Conclusion

In this article, we have found that the foundation of every learner's interest in education and being in a school environment is established. If the environment does not align with the individual's expectations, it can create a feeling of repulsion and a lack of interest in learning for the learner. The shape and layout of classrooms, color, lighting, ventilation, educational facilities, interior decoration, and all other factors are effective in teaching and creating interest and motivation in learners. Therefore, with these interpretations, to facilitate effective learning, we must first establish a suitable and standardized environment.

This article focuses on the role of environmental and geographical factors in the educational process. It emphasizes that the learning environment is crucial for fostering learners' interest and engagement in education. Factors such as the physical environment (including classroom layout, lighting, and ventilation), geographical location (including accessibility), geographic infrastructure (including facilities and transportation), natural resources (utilizing the local environment), culture, local communities (adapting to local needs), and geographic diversity (tailoring education to different regions) all play significant roles in shaping the teaching and learning experience. The article suggests that paying attention to the relationship between the environment and human behavior is essential, especially in educational settings. It is recommended to design educational environments that foster critical thinking and active learning, ultimately creating interest and satisfaction among learners. The role of school administrators and teachers in shaping the environment is highlighted as crucial.

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