

A Comprehensive Analysis of the Educational Advantages of Nature and Outdoor Physical Education for Students' Learning

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Abstract: In the field of education, outdoor learning in natural settings is becoming increasingly popular. But as practitioner usage has grown and teacher opinions have changed, the body of research evidence has not kept up. Formal research and anecdotal data point to the substantial benefits of the physical education-nature relationship for health and wellbeing. The educational advantages of outdoor learning are still being worked out, but they include providing low-cost, non-intrusive pedagogical solutions to public health issues, especially those pertaining to mental health, wellbeing, physical literacy, and promoting physical exercise. The advantages of nature and outdoor physical education for students' learning are addressed in this paper, which makes use of a systematic review. This review aims to provide a comprehensive overview of the extensive global research conducted on outdoor learning and its benefits for human development, well-being, and progress. Insights from the comprehensive review will help frontline educators, educational policymakers, and teacher-training institutions enhance the educational experiences of pupils especially in their Physical Education class.

Keywords: Physical Education, Nature, Natural Environment, Learning, Systematic Review.

1. Introduction

The environment is a vital component of life for humans. Children's surroundings have a big impact on how they develop. Learning was formerly thought of as "a passive activity," and students were thought of as "empty organisms that incidentally react less or more to stimuli." This perception is within a deterministic model, which suggests that specific learning activities or responses are produced by bringing in specific stimuli in the learner's perceptual environment. However, the individual's intent has not been taken into consideration in this interaction. If this model had been completely accurate, then all students would have learned the same things using the same method, even if their individual competences and capacities differed.

Piaget believed that children actively participate in their education. Subsequent research by child psychologists has also shown that newborns are capable of perceiving their environment. According to Loebach (2004), a popular perspective nowadays holds that childhood is a phase of active and continuous learning, initiated and mostly handled by children through play and impacted by various environmental influences. The environment plays a crucial part in this process as a result. Play spaces that enhance children's learning are designed with feedback from disciplines with varying areas of interest. According to Loebach (2004), these fields include environment and behavior, early childhood education research, and development and child psychology.

To effectively design spaces for children, it is necessary to have a thorough understanding of the child, their needs and demands, their developmental process, the nature of their relationship with their environment, and the opportunities that the environment presents to meet those needs and demands. Spaces should then be created in line with the design ideas. At this time, it is vital to explore the following notions during the process of building outdoor learning settings for children. Physical education is one of the disciplines that must be studied outdoors. The foundation of an extensive school physical activity program is physical education. Physical education offers cognitive content and instruction designed to develop motor skills, knowledge, and behaviors for physical activity and physical fitness. It is an academic subject distinguished by a planned, sequential K–12 curriculum (course of study) that is based on the national standards for physical education. Students can be given the abilities and confidence to be physically active for the rest of their lives if schools are supported in implementing daily physical education programs. Hence, enjoying the physical activities outdoor is highly recommended to educators.

Wesley-Esquimaux (2017), cited in Mann et al. (2021) stated that for the most of human history, learning outside has been the norm. For Indigenous tribes all across the world, knowing how to survive and keep a balance in the natural world was the learning context. Although playing outside was prevalent, the learning environment moved indoors to the classroom when mass education started in the 19th century (Joyce, 2012). However, many continued to believe that education should be connected to the natural world, and by the later part of the 20th century, "outdoor education" had become popular as a substitute for curriculum-based learning in many nations (Lugg, A.; Quay, J. 2020; Quay, J., 2016).

A significant body of research has emerged in recent years that suggests spending time in nature enhances psychological health and well-being (Shanahan et al., 2016). Chang and Chen (2005) discovered, for instance, a correlation between low anxiety-related behaviors and window views of indoor plants and nature. When indoor plants and views of nature were eliminated from the open spaces, tension and anxiety increased. According to research by Weinstein et al. (2009), spending time in natural settings improved empathy and psychological health. Mitchell (2013) discovered a link between a decreased risk of mental health problems and regular use of natural settings for recreational purposes. Nonetheless, Ward Thompson and Aspinall (2011), and Mitchell, (2013) suggest that the relationship between natural settings and health outcomes may be more complex than previously thought. Hence, this study is being conducted to explore on the effects of exposing the students to nature during their physical activities.

2. Related Literature and Studies

Students' Learning: As stated by Acar, H. (2014) Learning environments can also be used to assess the topics of environmental education and the role of the environment in education. "Environmental education aims to create behavior in humans toward these processes, including informing, raising consciousness, warning, balancing, development, and protection," according to the statement. The Conference on Environmental Education held in Tbilisi in 1977 emphasized that "a successful environmental education should make a human being more aware of the environment in which he lives, more responsible, more knowledgeable, more experienced, more skilled, and more participatory." It also focuses on recognizing and differentiating the values, attitudes, and concepts related to human biophysical and social environments (Güler, 2009). In addition, learning outdoors is defined as taking students outside to teach them important curriculum lessons in their immediate or nearby surroundings. There are four possible zones for this type of learning: school grounds, local neighborhoods, day excursions, overnight stays/residential camps, and expeditions (Beames, Higgins, Nicol, 2012).

"Plant a tree if you have been considering it for ten years. People should be educated if you are planning ahead by a century" (Davis, 1998). These passages, which are taken from a poem in Chinese, highlight the significance of education. Together, students, educators, and the general public will identify democratic solutions to environmental challenges and problems through environmental education. This situation involves multiple disciplines. Environmental education is a method of thinking that is grounded in reality rather than being an alternative (Davis, 1998). Güler (2009) also emphasized that environmental education aims to provide people with knowledge about the ecological balance and their own roles within it, as well as to help them come up with ideas for coexisting peacefully with the environment; and to make them gain the necessary skills needed for an effective and liable participation. Nochefranca et. al (2022) supports this claim that students cognitive ability and critical skills can be best develop by exposing them in a natural environment and by providing proper stimuli that motivate them.

Beginning in the early 19th century, German and Swedish gymnastics became a subject of study in schools for physical education (Hackensmith, 1966). Its impact on human health was immediately identified. As the primary learning objectives for pupils in physical education, personal cleanliness and physical exercise for physical health were included into the curriculum around the turn of the 20th century (Weston, 1962). However, the primary emphasis on health was critiqued for being overly limited and harmful to a child's overall development. Wood's inclusive approach to physical education was later embraced by the education world, which included basic movements and athletic skills as the main instructional focus.

Over the last fifteen years, physical education has once again changed to link movement of the body to its effects (physical activity and health, for example), teaching kids the principles of healthy living and the abilities required for an active lifestyle (NASPE, 2004).

A landmark study by Sallis and McKenzie (1991) defined physical education as instructional content delivered through a “comprehensive but physically active approach that involves teaching social, cognitive, and physical skills and achieving other goals through movement” (p. 126). Siedentop (2009), who claims that physical education is instruction through the physical world, likewise emphasizes this viewpoint.

The two primary objectives of physical education, according to Sallis and McKenzie (1991), are to: (1) get kids and teens ready for a lifetime of physical exercise; and (2) get them moving during physical education. These objectives stand for the long-term advantages of physically education that promotes health, which help kids and teenagers grow up to be active people. Mirrahimi et. al (2011) said that most research has linked learning experiences in the natural world to improvements in environmental approach, awareness, and behavior support (Ballantyne & Packer, 2006). The environment affects learning, according to a number of recent research. Although it is evident that the natural environment can inspire and support a variety of important learning outcomes (Johnson, 2007), it also has a big impact on students who struggle to focus, trained outside of the classroom, are not ready learners, or have attention deficit disorder (ADD) (Dyment & Bell 2007).

Moreover, a number of credible studies have demonstrated the benefits of interacting with the natural world in the classroom, including: promoting language development, collaboration (Johnson, 2007), raising academic achievement (Bell & Dyment, 2008), improving scores, offering opportunities for an experimental learning environment; generating new knowledge, skills, and values; having the capacity to spread awareness; providing a supportive environment for integrating and implementing the curriculum in schools; teaching students about interconnection (Dyment, 2005); increasing educational performance; improved enthusiasm, creativity, engagement for students' learning (Johnson, 2007).

Further, environmental education and early childhood education complement one another (Davis, 1998). Because the knowledge and behaviors that a person learns up during their youth will carry over into adulthood. In addition, Davis (1998) states that cultivating a sensitive and responsible attitude toward the environment requires children to engage in certain activities, like building habitats for lizards, ants, and birds, gathering fallen leaves, and playing in outdoor areas with water, sand, and mud that encourages exploration. We must provide these kinds of experiences for our kids.

As a formal subject area taught in schools, physical education is standards-based and includes benchmark- and standard-based assessment. Physical education, as a subject in schools, focuses on teaching school-aged children the science and practices of physically active, healthy living. It is defined as “a planned sequential K–12 standards-based program of curricula and instruction designed to develop motor skills, knowledge, and behaviors of healthy active living, physical fitness, sportsmanship, self-efficacy, and emotional intelligence” (NASPE, 2012). It provides a means of involving kids in physically demanding endeavors that are age-appropriate and aim to improve their health, gross motor skills, and fitness (Sallis et al., 2003; Robinson and Goodway, 2009; Robinson, 2011).

Additionally, Ozer (2006) explained how the Green School's sustainability program was able to give limited time capabilities by using low-protection annuals for replanting in place of plants. The schooling and Skill Committee of the House of Commons in the United Kingdom (2005) highlights the need to update current learning approaches in order to integrate naturalized surroundings into schooling. There was, in fact, the most convincing proof that a wide range of outcomes had been achieved in schools that had been green and integrated into the educational process. According to Johnson (2007), there was evidence that the organized study program had an impact on the outcomes of training gained in green schools.

Naturally, learning takes place in the natural world through a variety of means outside formal education. Research has shown that informal learning can also take place in the natural world, and the way it is done, investigation highlights the benefits of student involvement in natural environment processes. (Moble & Wong, 1997; Adams, 1993; Titman, 1994). One significant type of learning that takes place without the presence of teachers is informal education (Dyment, 2005).

Instructors use the surrounding environment to teach particular subjects (Jørring et al., 2020), and students are encouraged to be in charge of their education, become proficient, and create a feeling of meaning and purpose (Gray, 2018). For school-age children, outdoor learning is defined as frequent, scheduled learning experiences that take place in outdoor environments, either on or off campus. On the other hand, school field trips to a range

of indoor and outdoor off-campus learning contexts, such as museums and industrial plants, are included in out-of-school learning (Tal, 2011).

Given the diverse meanings, understandings, and practices across different research fields, nations, and cultures, it is difficult to provide an all-inclusive definition of outdoor education (Allison, 2016). Outdoor adventure education, woodland school, udeskole, friluftsliv, and learning outside the classroom are some common terms. Outside education can be broadly defined as instruction, learning, and/or experience in an outside and/or non-school setting. As a result, the learning and teaching content varies and is determined by the program's overall goal, the audience it is intended for, and the outdoor environment. Examples of such goals include expanding one's knowledge of the natural sciences, increasing physical activity, developing leadership qualities, fostering social and personal growth, developing survival skills, and honing one's abilities in outdoor sports.

The subject of outdoor education has seen the publication of six significant reviews and meta-analyses in recent decades (Rickinson, Dillon, Teamey, Morris, Choi, Sanders, Benefield, 2017). Consider assessing the effects of (i) fieldwork and visits; (ii) outdoor adventure activities; and (iii) school grounds and community projects, to put a broad emphasis on outdoor learning.

The authors outlined a variety of advantages for each category, including an improvement in academic success and physical activity, the growth of social skills, and a positive attitude toward the surroundings. By examining primary research studies on outdoor learning from the UK that have been published since 2003, the current systematic review by Fiennes et al. (2017) partially updated the work of Rickinson et al. As per the findings of Rickinson et al., the majority of the research demonstrated favorable impacts on an extensive array of outcomes. According to Becker, Lauterbach, Spengler, Dettweiler, and Mess (2017), the majority of the research themes remained adventurous and residential activities, with only a small number of studies having a strong connection to core curriculum areas.

3. Physical Activity's Place in Nature

The well-documented advantages of engaging in outdoor activities, gardening, and forest walks are elucidated by Pasanen et al. (2014) and Passmore and Howell (2014). Engaging in outdoor physical activity has been linked to improved mood (Hartig et al., 2003), increased attention spans, and increased cognitive function (Berman et al., 2012). Physical activities like horseback riding, walking, cycling, fishing, and nature conservation led to significant improvements in overall mood disturbance and self-esteem, according to Pretty et al. (2007). Walking in the company of nature has been shown by Hartig et al. (2003) to provide more beneficial emotional and cognitive effects than walking in urban settings.

Passmore and Howell (2014) examined the impact of a two-week physical activity in natural settings intervention on two aspects of well-being: hedonic (achieving pleasure and avoiding pain) and eudemonic (meaning and self-realization). They discovered that during the two-week intervention, hedonic tone and eudemonic well-being both improved. Mayer et al. (2009) conducted a study that contrasted a 15-minute walk in an urban environment with a comparable walk in a nature setting. Exposure to real nature was more conducive to emotional well-being than urban environments.

While the majority of research on the benefits of physical activity in nature for psychological health and well-being has concentrated on enhancing positive outcomes, some studies have also examined the benefits of green exercise for lowering psychological discomfort, including stress and anxiety.

There are two different aspects that make up anxiety. Temporary anxiety related to immediate senses of threat is referred to as state anxiety. The underlying attribute that drives the intensity and propensity of state anxiety responses is trait anxiety, which is a reasonably stable trait (Spielberger and Reheiser, 2009). Events of state anxiety can be predicted by high trait anxiety. Research on the relationship between anxiety and green exercise has concentrated on the benefits of brief bursts of green exercise on anxiety states. The results indicate that the greenness of the surrounding environment during exercise is more likely to be associated with reductions in anxiety states than exercise alone (Mackay and Neill, 2010).

As a result, researchers have hypothesized that engaging in regular green exercise is likely to be connected with low levels of trait anxiety (Paluska and Schwenk, 2000; Martyn and Brymer, 2016). Regular exercise has also

been linked to lower levels of trait anxiety. Research has also shown that exposure to nature can assist control and lessen the negative consequences of stress, which can cause anxiety if they persist (Vyas et al., 2004). These findings indicate that nature can both prevent stress from having the negative long-term effects and prevent stress from having the capacity to cause anxiety.

4. Discussions

Our goal of recognizing and characterizing the advantages and difficulties of implementing outdoor learning has been achieved by means of a brief, deliberate narrative synthesis of a chosen body of literature. Interestingly, the investigation emphasized how important it is for teachers to play in enabling outdoor learning and education. With some research suggesting that instructors may not feel adequately prepared with the professional knowledge or understanding required to conduct outdoor learning, it emphasizes the significance of assistance in the form of teacher education and professional development. Furthermore, a significant challenge in utilizing outdoor learning spaces is the fact that there isn't always nature nearby the school, particularly for urban learning environments.

On the other hand, some studies (Chawla Citation 2015; Puhakka et al. Citation 2019; Roslund et al. Citation 2020) suggest adding vegetation or other natural elements to the school playground or classroom if there isn't any nearby nature or natural environment. In an ideal world, however, schools and daycare facilities would be constructed in close proximity to parks and forests to facilitate easy access. It was noted that every category had possibilities and obstacles when analyzing the advantages and difficulties that narrative synthesis made clear. But it soon became clear that the way schooling was implemented shared some commonalities. These components of outdoor learning that are relevant to implementation.

With regard to outdoor learning, it is believed that this visual representation of categories and elements would help educators and other professionals thinking about the crucial border conditions. While our investigation focuses on ECEC, the components may also be used in elementary, secondary, and even postsecondary education.

Many controlled studies have shown how stress-relieving nature is for adults (Kuo, 2015), and the data currently available suggests that children can also benefit from nature in a similar way. Studies by Bell and Dymont (2008), Chawla (2015), Wiens et al. (2016), and others have linked nature to lower levels of stress in children, both physiologically and self-reported.

According to Li and Sullivan's (2016) experimental study, there is a systematic reduction in heart rate and self-reported stress when a high school classroom has a view of greenery outside the window, but not when the view is created. Additionally, cortisol levels decreased during the school day when lessons were held in the forest rather than in a classroom, and these effects could not be attributed to the physical activity associated with learning outside. Students who learned one day a week in a forest setting demonstrated healthier diurnal rhythms in cortisol in that setting than a comparison group that learned indoors (Dettweiler et al., 2017).

5. Conclusion

The goal of physical education is to improve physical competence through the development of certain knowledge, skills, and understanding. A special function in education is played by physical education, which is an essential component of the educational process. Numerous benefits of nature for children's development include improved physical health and social-emotional and intellectual growth. A child's motor abilities improve when they play outside and spend time in the natural environment. Playing and learning outside improves balance and coordination. The results of this study indicate that learning, education, personal growth, and social development can all be fostered in the natural environment by providing opportunities for students to practice social skills, self-awareness, self-confidence, self-regulation, sharing, teamwork, better problem solving in the classroom and a significant global issues. Students also get more chances to establish connections with their educators, their surroundings, their lives, and their future selves. Additionally, learning outcomes are improved through the use of natural environments, which include raising students' awareness of natural systems, encouraging sustainability and recycling education, managing waste water and solar energy, improving academic performance and grade point averages at every level, and advancing science, physical education, reading, writing, nutrition, and other subject areas. Thus, opportunities to learn by taste, smelling, touching, and

feeling are provided by green school grounds in addition to hearing and seeing. As a result, the process of motivating and meaningful learning benefits greatly from the stimulation provided by the natural world.

6. References

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