





[17]. This book stated “that nature would have them children before they are men. If we try to invert this order, we shall produce a forced fruit immature and flavorless, fruit which will be rotten before it is ripe; we shall have young doctors and old children” [17].

In the mid-1800s, prominent Swiss-born Harvard College Zoology professor Louis Agassiz famously penned his injunction “to study nature directly, not through books” [18]. Stating that children should have the opportunity to have contact with nature by having children “be like little ants, continually occupied in doing something, carrying, drawing, constructing, and conveying” [19]. From this period, the use of nature within education has been a commonly researched and implemented tool, beginning with one of the most significant educational movements known as Nature Study by Agassiz. This nature study (an educational movement that attempted to integrate scientific investigation with the use of the outdoors) started on a remote Penikese island in 1873. It ultimately became the first major American educational reform to “fully attempt general education reform through combining educational reform theory with the study of the environment” [19]. One student who was part of this program in 1885 suggested it “was like sunlight breaking through gloomy clouds” [19]. The fields of thought opened up to hungry minds were entrancing; it is a small wonder that a movement began that closely resembled a stampede [19]. However, the use of the outdoors in education was not an isolated movement; renowned philosopher John Dewey and his progressive education movement suggesting that

*“The average American child seldom comes in direct contact with nature. In school, he learns a few dates from books, to press a button, to step on an accelerator: but he is in danger of losing contact with primitive realities – with the world, with the space about us, with fields, with rivers, with the problems of getting shelter and of obtaining food that have always conditioned life and that still do [20].”*

John Dewey, one of the world’s leading philosophers, noted numerous ideas and concepts in his vast educational papers that researchers have since linked to the founding tenants of outdoor based learning. From the importance of socially organized outdoor activities, the importance of hands-on learning to the importance of reflections and seen now as a critical component of contemporary outdoor learning programs.

The use of the outdoors within education was not an isolated phenomenon in the United States. In 1906, Dr. Maria Montessori began the first Montessori school in Lorenzo, Rome. To Montessori, the child, the teacher, and the environment constituted an organic whole” and should allow children to “familiarize themselves with animals and plants and also grow things themselves” [21]. This child-

centered form of education quickly spread throughout the world and received the praise of famous philosophers and inventors, including Thomas Edison and Alexander Bell. This praise resulted in Bell opening the first Montessori school in his own home in Nova Scotia just one year later for his own children [22]. There are currently 20,000 Montessori schools worldwide, including 3,000 in the United States.

Montessori Education was not the only emerging form of outdoor-based education during this time, with the creation of the term “kindergarten,” which “literally means “children’s garden,” formed in Germany by Friedrich Fröbel. Froebel’s philosophy was focused on educating the body, mind, and soul through play, outdoor experiences, music, movement, spontaneity, creativity, and independence” [23]. The first American Kindergarten opened in the early 1800s; by the mid-1880s, hundreds of kindergartens spread throughout the United States [24]. Kindergartens have changed over time, including the advent of Forest schools and Bush Kinders, a form of Kindergarten in Australia that reflects the mounting body of evidence that outdoor activities such as exploring natural environments are beneficial to children and contribute to improving children’s health and well-being” [25]. This transformation of early childhood education over time is also evident in countries including Sweden, Denmark, Norway, and Germany, each with various reiterations of early childhood movements.

Similarly, Rudolph Steiner (1862-1925) created his own style of early childhood education known as the Steiner Schools, also known as Waldorf schools. Steiner schools are found throughout the world within early childhood education and primary / elementary education. Constable [26] finds that Steiner’s style of learning is probably one of the closest historic models we have to our current outdoor classrooms. Steiner and his schools encouraged all children to use the outdoor environment, provided spaces that were as natural as possible, and included many of the elements of today’s outdoor classrooms, such as trees, digging areas, vegetable beds, and fire pits, and a composting area [26].

However, formal education facilities were not the only institutions to initiate learning programs in the local or surrounding areas. Recreational facilities such as parks and nature centers joined the movement into the outdoors. Scouting, YMCAs, 4-H, and other service groups and hospital therapeutic programs took advantage of outdoor environments to promote their goals. Founder of Boy Scouts Baden Powell suggested, “A week of camp life is worth six months of theoretical teaching in the meeting room.” [27]. These various programs resulted in more than 10% of the youth between 1910 and 1920 having spent at least one year in Scouts or YMCA programs [28].

Extending on this movement. Kurt Hahn, considered one of the modern fathers of experiential education and the founder of Upward Bound, believed that experience in nature is significant in teaching people to be more resourceful and more grounded in themselves. During the 1940s, Hahn developed a new theory behind the use of the outdoors known as adventure education. The first adventure program was designed initially to “reduce the loss of lives due to sinkings of their ships in the Atlantic Ocean” [29] with a focus on the development of “independence, initiative, physical fitness, self-reliance, and resourcefulness” of its participants. The success of the program and methodology spread quickly throughout the world into programs and standalone schools. The first United States Outward Bound school opened in Boulder, Colorado, in 1963 “by 1995, there were 48 Outward Bound schools on five continents” [30]. Although vastly different from outdoor learning today, Adventure Education aims to use “challenge activities to achieve educational goals” [31]. Adventure education and its subsequent variations, including project adventure, which began in 1970, quickly spread throughout the United States. However, its original intention of using adventure-based activities for educational purposes has not changed.

One of the newest outdoor-based learning forms is outdoor recreation, commonly confused with adventure education. However, the caveat of educational intent within adventure education separates adventure education and outdoor recreation. Outdoor recreation most often “occurs during leisure time, which, since the start of the industrial era, has increased dramatically for most people” [31]. Reflecting on the beginning of this movement, in the 1890s, most of the population believed “the frontiersman was good, the wilderness, as his primary adversary, was bad, the villain of the national drama.” [32]. Outdoor recreation remains one of the most common methodologies of using the outdoors. Outdoor recreation includes camping, rock climbing, snowmobiling, camps, archery, bird watching, wilderness expeditions, walking a nature trail, or painting outdoors [31].

The most common contemporary terminology behind implementing learning in the outdoors is known as outdoor education, often used as an umbrella term for all types of education outside. Originally termed in the early 1900s [33] Outdoor education meant a form of education that was not indoor education. To be involved in outdoor education, one had to exit a literal door into the schoolyard, the school garden, the community past the school fence, and perhaps even the woods beyond [33]. Over time this definition and objectives of outdoor education have undergone a significant change; however typically have included some elements of improving leadership skills, group

cohesion, enhancing problem-solving skills, self-concept, increasing trust, and improving communication through a form of outdoor-based activities, including hiking, climbing, canoeing and leadership activities. Many scholars find confusion in the terminology and differences between Outdoor recreation and outdoor education [2]. Yasim et al. (2016) [34] find “the fundamental difference lies in the outdoor education has an educational goal, whereas outdoor recreation places less emphasis on explicit educational goals and a greater emphasis on fun and enjoyment” [35] notes that outdoor education occurs typically in a structured fashion in schools or higher institutions, whereas outdoor recreation typically occurs in people’s own leisure [35]. Outdoor education will remain the dominant terminology when referring to any outdoor educational activity and has encapsulated many of the earlier programs, including nature study and adventure education [36]. However, a new contemporary reiteration is starting to draw much of the dominant focus.

One of the newest and emerging uses of the outdoors in education is outdoor learning, the focus of this overall paper. Parker [38] notes, “outdoor learning means different things to different people, depending on their location, background or relationship to positive or negative outdoor experiences”. Many of the traits of outdoor learning can be traced back through all levels of nature study, environmental and outdoor education, Montessori Education, Steiner education, kindergartens, forest schools, and indigenous knowledge. Unlike some of its predecessors, outdoor learning does not rely on adventure activities; it does not require complex and challenging environments; instead, all it needs is to exit the bounds of the formal classroom and go into the outdoors, in any environment or for any subject matter. In simple form, as noted by Beames, Higgins, and Nicol [38], outdoor learning is simply the act of teaching and learning outside. Joyce [39] notes that the use of outdoor learning in schools “has become highly visible in recent years, in the press, in magazines, on television, on the internet”, which coincides with the increase of schools embedding the outdoors within the programs.

It is clear that outdoor education, and its contemporary reiteration of outdoor learning, which falls under this banner, have undergone a tremendous pedagogical transformation over the last previous 100 years. This transformation is highlighted by Quay and Seaman [33], who note more than 78 names used to identify sorts of outdoor education programs. Each of these historical perspectives describes what it means to teach education in the outdoors somewhat differently. These perspectives may include utilizing the outdoors to teach environmental components of nature, preparing physical fitness through rock climbing, or using the outdoors as a site for exploration and learning.

## 4. Benefits of outdoor learning

The benefits of outdoor learning are widely publicized [40], with countless studies finding numerous benefits to utilizing the outdoors as a part of one's teaching practice, from increased learning opportunities, health and well-being, educational benefits, developmental benefits and many more. Paci [41] finds that when "looking at the broad range of benefits of exposing children to nature suggests that we should place greater emphasis on incorporating nature into children's lives". The Australian Curriculum [13] notes the following benefits of outdoor learning include increasing skills and understanding while valuing a positive relationship with natural environments and promoting sustainable use of these environments.

Paci [41] and other researchers have "revealed that experiences in the outdoors can promote children's healthy physical well-being, improve children's emotion regulation, support psychological well-being, and help foster social skills and friendships". This paper will categorize these countless studies into six sections to highlight a small sample of the benefits of embedding outdoor learning for students and staff.

### 4.1. Health and Wellbeing Benefits

Outdoor learning has produced various health benefits for students engaging in outdoor-based programs. These range from natural air circulation, raised oxygen levels, and increased sleep to increased vitamin D from an increase in sunlight outdoors, which is further linked to bone health, cardiovascular health, and insulin regulation [42].

### 4.2. Children's Physical Development

Providing a natural environment within school grounds is one way to promote outdoor activities [43] within the student population. Spending time in a natural environment has a range of benefits, including improving the development of children's gross motor skills. By taking students into a range of natural outdoor learning environments, students are provided with a rich and dynamic environment to develop these motor skills. In a study conducted by Fjørtoft [44], it was found that children who play in a natural forest typically performed stronger in motor fitness tests than children playing in a traditional playground environment. Fjørtoft [44] finds that "Slopes and rocks give children obstacles that they can climb up and jump from, vegetation provides areas for shelter and trees for climbing, and open spaces give children the opportunity to run and tumble". Many studies have shown strong correlations between students being outside and increased physical capability and fitness; however, it is essential to note that although fitness is

not a core component of an outdoor learning program, it is a beneficial by-product whose effects cannot be ignored.

### 4.3. Mental Health Benefits

Pearson and Craig [45] highlight the growing evidence to suggest that exposure to natural environments can be associated with mental health benefits. This positive benefit follows Taylor et al. [46] assertion that time spent in green spaces, including parks, play areas, and gardens, has reduced stress and mental fatigue in students. These benefits range from lower stress levels with close proximity to greenspace, which is further linked to a reduction in depression and anxiety [47]. Kuo and Sullivan [49] found that children who were exposed to greener environments demonstrated less aggression and violence and less mental stress. Just simply viewing nature is shown to reduce the physiological stress response, increase the level of interest and attention, and decrease feelings of fear and anger or aggression [49].

### 4.4 Social-Emotional and Cognitive Development

In addition to physical benefits, outdoor learning has been shown to assist students with social-emotional and cognitive development (Kellert, 2004) [50] by fostering the development of creativity, problem-solving, independence, and confidence. Wells [51] found that everyday exposure to natural environments improves children's cognitive capacities. Taylor and Kuo [48] further found that kids with Attention-deficit/hyperactivity disorder (ADHD) could concentrate better and rated their experiences more favorably in the outdoors compared to conventional classroom settings. Schertz and Berman [52] found "a positive association between green space around schools and cognitive development in children". Interestingly, Stevenson et al. [53] found that students improve their cognitive performance after nature exposure but maintain performance after urban exposure. Rivkin [54] highlights that "The "richness and novelty" of outdoors stimulating brain development" with the proximity to, views of, and daily exposure to natural settings increases children's ability to focus and enhances a range of cognitive skills [51].

### 4.5. Academic Benefits

Numerous studies within the United States have highlighted the academic benefits of implementing outdoor-related classrooms in social studies, science, language arts, and math [55]. One study found that by engaging in an outdoor science program, students

improved their testing scores by 27% [55]. A study by Lieberman et al. [56] focused on the educational benefits of outdoor classrooms, with the findings suggesting that students who were involved in the outdoor learning programs scored higher on 72% of all assessments, including math and science subjects than students who did not engage in an outdoor learning program. Furthermore, it was shown within this study that student attendance also was higher for students engaging in outdoor learning programs than those who were not [56].

#### 4.6. Behavior Benefits

James and Williams [57] study highlighted that students who struggle with traditional classroom settings could gain the most through tailored outdoor learning experiences. Bjorge et al. [58] expand on this finding by noting that “instead of experiencing struggles with motivation, confidence, lack of attention, or social skills inside the classroom, these students gain these particular skills through learning outdoors and can even thrive and take on the leadership role through outdoor hands-on experiences”. This finding was evident in a study by Lieberman and Hoody [59], who found that in the first year of a Texas outdoor learning program, teachers made 560 disciplinary referrals to the office. The following year, as program implementation expanded, that number dropped to 160; once the program was fully established, this number dropped once again to only 50 disciplinary referrals. Lieberman and Hoody [59] conclude that the principal and teachers attribute this significant decrease in behavioral problems to an increased student engagement within the outdoor learning program.

#### 4.7. Improved Memory

During a study on memory retention in an elementary school setting [60], it was found that the memory of the context and experience in outdoor learning might be more significant than any specific learning that was meant to (or did) take place. For some students, the factual details learned on location were as strong a memory as the visit itself. These memories were sometimes associated with sounds and sights; on other occasions, they were related to concrete objects such as pebbles. Van Hedger et al. [61] agree that being outdoors can positively affect memory. Their research highlights those students had increased working memory performance after listening to nature sounds relative to urban sounds.

#### 4.8. Attitudes to the outdoor environment

It is difficult to conserve and protect what you don't understand” [62]. Engaging in outdoor learning

has been proven to assist students in developing a positive attitude toward the environment. This positive attitude then transforms students perceiving themselves as connected to nature, leading to stronger pro-environmental attitudes and behaviors [63]. Nisbet et al. [64] highlight that contact with nature plays a crucial role in developing nature connectedness, and educational interventions that provide a sustained and emotionally significant contact with nature may increase the perception of being connected to, and part of, the wider natural world among children and adolescents.

#### 4.9. Teacher Benefits

In a 2019 article by Marchant et al. [65], researchers analyzed the learning outcomes for three primary schools in the south of Wales, where classes were held in a natural environment for at least an hour a week. Within the data, an interesting finding became apparent: although initially skeptical of outdoor learning, teachers found increased job satisfaction and well-being resulting from being outdoors. This finding suggests that outdoor learning can create learning contexts for students and foster teacher well-being. Research by Wirth and Rosenow [66] note that teachers reported they could have a deeper understanding of their students as they are closely involved with the students instead of playing a supervisory role. Furthermore, Dymont [67] found that teachers expressed renewed enthusiasm for teaching when they had time outdoors. In an era of increased teacher burnout, we should not underestimate the effect of green schools and outdoor education on teachers.

It is important to note that the above research highlights many benefits of outdoor learning; however, this does not provide an exhaustive list of all potential benefits of outdoor learning. What has been listed instead is often considered the primary benefits of outdoor learning programs.

### 5. Challenges of outdoor learning

Despite the extensively documented benefits of implementing outdoor learning within education, the application of taking students into the outdoors still faces various challenges and barriers. This section will briefly overview commonly associated challenges and barriers when implementing outdoor learning.

Van Dijk-Wesselius et al. [68] found that barriers to implementing outdoor learning can be summarized into four broad themes. The most significant barrier to outdoor learning relates to having no formal status in teachers' educational practice. Included within this theme were teachers feeling hindered by the demands of the existing curriculum, lack of time, inspiration, and structure. However, many of these barriers were

able to be overcome by teachers undertaking workshops and training to familiarize teachers with the value and opportunities of outdoor learning, encouraging teachers to work with colleagues to implement activities, making conscious decisions to devote time to outdoor learning, and developing a common framework for outdoor learning implementation.

The second largest barrier was a lack of teachers' confidence in their outdoor teaching expertise; this included a fear of losing control and difficulties in managing children's behavior. Three strategies were identified to overcome this barrier: familiarizing teachers with outdoor learning, communicating expected organization and rules with students, and altering teaching attitudes and styles to adapt to an outdoor learning classroom.

The third largest barrier was situated around the difficulty in getting started, particularly at the beginning of the program. Contained in this barrier was a lack of enthusiasm, empathizing, and engagement within the process of outdoor learning from teachers. Strategies identified to overcome these barriers included breaking the implementation of outdoor learning into various small and feasible steps, providing inspiration and prestructured lessons, and watching a pioneer or experienced colleague implement outdoor learning.

The final barrier related to physical constraints; this included a lack of maintenance on the school grounds, a lack of evident greenspace, and varying weather conditions. To overcome these barriers, solutions included initiatives dedicated to greening the schoolyard and ensuring student respect for these environments. The weather barrier was more challenging to overcome; however, identified solutions included flexibility within scheduling and creativity in embedding outdoor activities within the indoor classroom.

Several studies further reflect on barriers to implementing outdoor learning; within these studies, identified challenges and barriers include fear and concern about health and safety when taking students into the outdoor environment, school curriculum requirements, shortage of support from administration, feeling constrained by a traditional view on teaching and inflexible daily teaching schedules [69].

A further barrier included the stigma of outdoor learning with the perception that "outdoor teaching was not perceived as 'real' teaching." [70]. This barrier was noted by Parker [71] who found that stigma was one of the most significant barriers to implementing outdoor education, whereas, in studies conducted over the preceding decades, stigma and perceptions ranked outside the top five barriers to outdoor education.

It is evident that there are challenges and barriers to implementing outdoor learning within the classroom. However, many of these barriers and challenges can be overcome with appropriate strategies and frameworks.

## 6. Outdoor learning program considerations

As previously noted within the barriers to implementing outdoor learning, one of the most considerable barriers surrounds educators being unaware of where and how to begin an outdoor learning program. Although outdoor learning can vary from school to school, many programming considerations will remain appropriate regardless of the schooling context. When planning the implementation of outdoor learning, educators must consider a range of working complexities of implementing outdoor learning. This section provides a brief overview of some key considerations when educators are considering launching an outdoor learning program.

Cost, Student numbers, Transportation, Extra insurances, Environment, Time, Framework, Skills, or programs you want to run, Evaluation and Goals, School needs, Facilities, Extra equipment, Parent and school board approval, Assessments, the Curriculum, and Training. These concepts must be considered when launching an outdoor learning program.

1. One of the other significant barriers to implementing outdoor learning stemmed from gaining approval to launch outdoor learning programs. When educators consider creating outdoor learning programs, the following questions should be investigated before the launch of outdoor learning programs.
2. Which experiences and outcomes can be addressed in our outdoor environment?
3. Who can offer advice on what is available locally?
4. Which places can be easily accessed on foot so that outdoor learning experiences can be sustainable and regular
5. Are the proposed learning contexts sufficiently challenging for the students?
6. Which places can be visited several times to add depth to learning?

Another significant concern for many educators when taking students outdoors is risk management; however, this concept of risk is often attributed to perceived risk rather than real risk [72]. Torkos [73] finds that not only teachers but mainly parents were concerned about the safety of their children during

outdoor education activities and about the risks that might appear.

Education Scotland [74] found that “managing the health and safety of learners and staff in the outdoors is vitally important, but with careful planning and conduct, outdoor experiences can be both safe and stimulating” and that “many outdoor learning activities carry no higher risk than activities and situations faced by learners on a day-to-day basis” [74]. This risk management may range from surveying the outdoor environment, being aware of first aid policies, checking equipment, understanding the weather, and knowing each student’s medical needs.

Without providing an extensive list of risk management documents, a short range of risk management considerations has been noted below when planning and implementing outdoor learning classes. However, Stephenson [75] concludes that transforming an environment into a danger-free environment becomes challenging, and children will have fewer independent decision-making experiences, fewer opportunities to assess their own limits, and fewer opportunities to gain confidence and self-esteem by coping independently. It is important to note that sometimes, children will fall and get bruises because it is part of their learning process [76]. However, educators must still ensure that all appropriate risk management steps have been undertaken to limit student injuries.

1. Is the level of challenge appropriate to the learner group?
2. How will risks be assessed and balanced against the benefits that can be expected?
3. Can the rationale for this experience be justified even if events do not go according to plan?
4. Are the management arrangements appropriate for the location selected?
5. Are the leadership and supervisory staff appropriately skilled, qualified and experienced?
6. How do we communicate with parents and careers?
7. Could we benefit from enrolling partners?
8. Are there any relevant examples of good practice that we can draw on?

## 7. COVID-19 pandemic of outdoor learning

Today’s modern school runs on the power of technology, from internet-controlled essential heating, cooling, and lights to projectors, smart boards, and one-to-one devices for every student. It is appropriate to say that a classroom today looks drastically different from a classroom 100 years ago. However, resulting from the COVID-19 pandemic,

contemporary classrooms are reimagining old techniques enacted initially during the tuberculosis pandemic some 100 years before to get through the current educational climate. When the COVID-19 pandemic started to sweep the world, schools shut their doors; learning was adapted overnight to virtual education, with students sitting in front of screens in their own homes learning through various online platforms such as zoom. Undoubtedly all subject and curriculum areas underwent a significant change; however, research suggests that one of the largest fields initially affected was that of education in the outdoors. In some areas of the world, spending time outside was initially regulated and restricted to reduce the spread of the virus; many school districts were at a loss on how to deal with a global pandemic, and they struggled with constantly evolving public health recommendations, complex schedules, how to structure classes, keep students and staff safe and how to appropriately educate students in this new world.

Asfeldt in Quay et al. [77] suggest that at a higher education level, institutions may see the success of online learning, considered a cheaper alternative that does not require teaching space, offices, and labs, as an opportunity to save millions of dollars by cutting outdoor-based programs. Furthermore, within this article, another author within this article Allen-Craig in Quay et al. [77], found things in this “virtual learning world are not quite right. There’s no joy of learning. There is no “light bulb” moments nor witnessing of awakening when skills, knowledge, and experience all come together to offer real-life learning. It lacks the constant dialogue, chatter, the jousting of ideas, the growth, support, and care. These couldn’t penetrate the firewalls of our online worlds”. Another subsequent author, Leather in Quay et al. [77], agrees that “there are some experiences identifiable as classic outdoor education that cannot be replicated: canoe expeditions, sailing trips, shared meals, campfires, handshakes and hugs, the embodied and the visceral”.

Bauld [78] finds that “As schools around the country sought a safe way to bring students back to classrooms last year, a solution emerged that had worked a century ago during another health crisis” that of outdoor learning. Initially launched in the 1900s as tuberculosis spread throughout North America, open-air schools were established nationwide. The outdoors was seen as a savior to continuing education similarly today; Epidemiologists learned that Coronavirus does not last for extended periods outdoors; As Quay et al. [77] found, “COVID-19 also presents opportunities.

The center for Disease Control and Prevention [79], in their operational guidance for K-12 schools, recommended that schools provide as much fresh air as possible for both students and educators. As a result, outdoor learning spread throughout the country to increase school capacity and decrease COVID-19



transmission. School districts and individual schools which previously had not implemented outdoor learning programs began to use and reexamine potential outdoor spaces for classes creatively. One example is the D.C State Board of Education, which invested \$9 million in outdoor learning. Vice president for the D.C State Board of Education, Gasoi, as cited by Will [80], noted, "I think the pandemic has offered us an opportunity to ... think differently about how we educate kids". Outdoor learning quickly spread throughout North American schools, from the Portland Public School district in Maine, which created 156 outdoor classrooms to accommodate more than 5000 students [80]. Similarly, the Boulder Valley District in Colorado began programs to identify outdoor learning spaces and assist in delivering programs at or near every school for its 31,000 district students. [81]

Students and teachers positively responded to this form of education; Kira Vue, a 10-year-old student, reflected upon learning outside as "It feels nice," "It's more wider than the classroom. ... You have more air to breathe, and you get to take your mask off." [80]. Aaliyah, a student from a different school, had a similar reflection on going outside for class "It's more comfortable than our desk because we stay inside a lot and it's like really relaxing outside than inside." [82]. Teachers also agreed; Share, a second-grade teacher in Ventura County, California, reflected, "Just the fresh air I think gets them excited and just being outside is nice. We get to hear all these wonderful birds, and it's just peaceful" [83]. Lane, a high school teacher in Minneapolis, found that "It was very dehumanizing to be [inside] and not be able to see their faces, outside brought some of that normalcy back. A lot of the anxieties came down. The vibe of the class changes." [80].

However, this shift to outdoor learning as a COVID safety measure may not be a temporary event [78], with students, teachers, and principals wanting outdoor learning to be permanently added to the campus. CEO of Green Schoolyards America believes outdoor learning is plan A and a "long-term solution to many of the systemic inequities in traditional academic settings [80]. Higgins in Quay et al. [78] suggests that although the COVID-19 pandemic may be a factor in stimulating interest in the role of outdoor learning, it can also play a role in post-Coronavirus school recovery. "Whilst social distancing, class sizes, limitations of the school estate, etc., may be driving factors, interest in outdoor learning amongst policy makers is palpable, and there is growing recognition of its potential learning, health, and well-being benefits".

Only time will tell the long-term effects that COVID-19 will have on the implementation and uptake of outdoor learning within schools and if outdoor learning will become "just a footnote to our pandemic story." However, outdoor learning has had

a powerful narrative within the overall COVID-19 pandemic, potentially being one of the few positives to come from the global pandemic.

## 8. Conclusion

The introduction to this paper referred to the ambiguity within the field of outdoor learning, from its terminology, history, implementation, benefits, and barriers, and effects of the COVID-19 pandemic on the field are filled with conjecture.

It is clear that outdoor learning, although having a contemporary interpretation, has an extensive history within education, dating back to Nature study in the early 1900s. Since this period, different interpretations such as character building (Scouts, YMCA) of the 1920s, Adventure education, Montessori education, Outdoor recreation and outdoor education to experiential learning, and many more integral cogs have led to forming what outdoor learning is today. The interpretations and definitions of what constitutes outdoor learning vary significantly depending on the locality and context of the discussion; however, regardless of this context, the fundamental component of taking students into the outdoors as a part of class remains the same.

By implementing outdoor learning and having students undertake learning activities in the outdoors, there is a range of researched benefits from health and well-being, academic and physical development, social-emotional development, increased learning opportunities, and many more. These benefits are not isolated to students alone, with research suggesting significant benefits to educators by implementing outdoor learning within their classrooms. However, the implementation of outdoor learning is not without its unique challenges, from having no formal status in teacher's educational practice, having a lack of confidence, questions on student behavior, difficulty getting started, physical restraints such as weather and fear and concern regarding health and safety of students in the outdoors. As highlighted within this paper, many of these barriers can be overcome with appropriate frameworks and strategies, allowing outdoor learning to occur in any context. When implementing outdoor learning programs within schooling, educators and school boards must consider many essential components from managing costs, transportation, insurance, evaluation goals, level of challenge, risk management, communication, assessments, and the curriculum. All these aspects must be considered and discussed for creating an outdoor learning program that is flexible and appropriate for students of all ages.

Undoubtedly, the COVID-19 pandemic has profoundly affected education; from the transfer of face-to-face classes to virtual zoom education, the education landscape has significantly transformed. However, this transformation has led to an increase in

outdoor learning by many schools that initially viewed outdoor learning as a way to return to school safely. As time passed, schools started to become aware of the benefits of outdoor learning programs outside of decreased COVID-19 transmission, with school districts, educators, and students signaling for outdoor learning not to become just another footnote in education's response to the COVID-19 pandemic.

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