



# International Journal of Education and Teaching

Publisher's Home Page: <https://www.svedbergopen.com/>



Research Paper

Open Access

## Exploring the Effect of Outdoor Education Experiences on Students' Environmental Behaviors and Servant Leadership in Public School Science Education

Zoncita D. Norman<sup>1\*</sup>

<sup>1</sup>Independent Researcher, Doctor of Philosophy in Leadership Studies, Gonzaga University, WA 99258, United States.  
E-mail: [normanzoncita@gmail.com](mailto:normanzoncita@gmail.com)

### Article Info

Volume 1, Issue 4, December 2021

Received : 17 August 2021

Accepted : 22 November 2021

Published : 05 December 2021

doi: [10.51483/IJEDT.1.4.2021.21-29](https://doi.org/10.51483/IJEDT.1.4.2021.21-29)

### Abstract

The latest continuous arrival of Afghan refugees in the Bay Area is a repetition of the first wave of Afghan immigration to the US in the nineties. Pertinently, Madhani (2021) reported the first group of 37,000 Afghan evacuees' arrivals are slated to resettle in their designated destination states by the states' governors and state refugee coordinators across the country. The administration has requested funding from Congress to help resettle 65,000 Afghans in the US by the end of September 2021 and 95,000 by September 2022. According to the State Department data, California is projected to take more arrivals than other states, that is, more than 5,200 people (Madhani, 2021). In my perspective, as a public school teacher in the School District of San Francisco in the nineties, this current Afghan immigrant resettlement in the US is a vivid reminder of the Afghan refugees' arrival and resettlement in California in the late 90s and early 2000s. These Afghan families who arrived in the 90s initially landed and stayed in San Francisco, CA and, gradually, relocated to the suburban counties of Fremont, Newark, Alameda, and Union City. While staying in San Francisco, these Afghan young learners attended school in the San Francisco Unified School District (SFUSD) and underwent placement as ESL students based on their level of English proficiency. Consequently, as a tenured ESL-Bilingual teacher at Galileo Academy of Science and Technology, SFUSD, I had the valued opportunity to serve and teach the Afghan high school learners in the school site. The ESL-Bilingual Department enrolled the Afghan and other immigrant students from Iraq, Saudi Arabia, India, Pakistan, Jordan, and Yemen, who, also, arrived in the Bay Area in the 90s, in my ESL Reading and Writing, Math and Sciences classes. Teaching multicultural classroom of limited- and non-English Speakers was a very challenging endeavor. To address this, I used multicultural teaching approaches and methodologies such as Outdoor Education, Natural Approach, Sheltered-English approach, and Cooperative Learning teaching methodologies to meet the educational needs of this student population in their learning and teaching journey (Norman, 2018). In this respect, this reflection seeks to highlight the efficacy of outdoor education learning experiences on the students' ecological behaviors, academic success, and servant leadership in the helping, healing, learning, and teaching process in both indoor and outdoor learning environments. In doing so: (A) firstly, I illuminate and explicate the following concepts and constructs: (1) servant leadership, (2) outdoor education, (3) STEM education, (4) ecological behaviors, (5) academic success; (B) secondly, I share my valued experiences of teaching and helping this student population in the healing, teaching, and learning process, (C) thirdly, I review relevant literature, and finally, draw my conclusion in this writing.

**Keywords:** *Multicultural teaching approaches, Outdoor education, Natural approach, Sheltered-English, Cooperative learning, Ecological behaviors, Academic success, Servant leadership, STEM education*

© 2021 Zoncita D. Norman. This is an open access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

\* Corresponding author: Zoncita D. Norman, Independent Researcher, Doctor of Philosophy in Leadership Studies, Gonzaga University. E-mail: [normanzoncita@gmail.com](mailto:normanzoncita@gmail.com)

## 1. Introduction

*Those who manage in the schools—teachers who manage the students directly and administrators who manage teachers and some students—are the most instances highly dedicated, humane people who have tried very hard but have yet to figure out how to manage so that students do significant amounts of quality work.*

– William Glaser, M.D.

The latest continuous arrival of Afghan immigrants in the Bay Area, is a repetition of the first wave of Afghan immigration to the US in the nineties. Pertinently, Madhani (2021) reported the first group of 37,000 Afghan evacuees' arrivals are slated to resettle in their designated destination states by the states' governors and state refugee coordinators across country. The administration has requested funding from Congress to help resettle 65,000 Afghans in the US by the end of September 2021 and 95,000 by September 2022. According to the State Department, California is projected to take more arrivals than other state, that is, more than 5,200 people. In my perspective, as a public schoolteacher in the School District of San Francisco in the nineties, this current Afghan immigrant resettlement in the US is a vivid reminder of the Afghan refugees' arrival and resettlement in California in the late 90s and early 2000s. These Afghan families who arrived in the 90s initially landed and stayed in San Francisco, CA and, gradually, relocated to the suburban counties of Fremont, Newark, and Union City counties. While staying in San Francisco, these young Afghan learners attended school in the San Francisco Unified School District (SFUSD) and underwent placement as ESL students based on their level of English proficiency level. Consequently, as a tenured ESL-Bilingual teacher at Galileo Academy of Science & Technology, SFUSD, I had the valued opportunity to serve and teach those high school Afghan learners in the school site. The ESL-Bilingual Department enrolled the Afghan and other immigrant students from Iraq, Saudi Arabia, India, Pakistan, Jordan, and Yemen, who, also, arrived in the Bay Area in the mid-90s, in my ESL Reading and Writing, Math and Sciences classes. Teaching multicultural classroom of limited- and non-English Speakers was a very challenging endeavor. To address this, I used multicultural teaching approaches and methodologies such as Outdoor Education, the Natural Approach, Sheltered-English, and Cooperative Learning teaching approaches and methodologies to meet the educational needs of this student population in their learning and teaching journey. In this respect, this reflection seeks to highlight the effectiveness of outdoor education learning experiences on the students' environmental behaviors, academic success, and servant leadership in the healing, helping, learning, and teaching processes in both indoor and outdoor learning environments. To do so: (A) firstly, I illuminate and explicate the following concepts and constructs: (1) servant leadership, (2) outdoor education, (3) STEM education, (4) ecological behaviors, (5) academic success; (B) secondly, I share my valued experiences of teaching and helping this student population in the healing, teaching, and learning processes, (C) thirdly, I review pertinent literature on the topic, and finally, draw my conclusion in this writing.

### 1.1. Defining and Explaining Servant Leadership

The originator of Servant Leadership philosophy, Robert K. Greenleaf (1977; 2002) conceptualized a servant-leader by combining the two roles of a servant and a leader in one real person in all levels of status or calling, believing that a person can live and be productive in the real world today. Greenleaf's idea of a servant as a leader had emerged from his reading of Herman Hesse's *Journey to the East*. In Greenleaf's (1977; 2002) perspective, this story had convinced him that the great leader is a "servant first," a simple fact that described Leo, the main character (.21). In the story, Leo joined the band of men on a mythical journey as the servant who did the group's chores, and sustained them with his spirit and song, until Leo vanished, and the group found out that Leo was truly "the titular head of the Order" and its spiritual guide and noble leader (Greenleaf, 1977; 2002).

Additionally, Greenleaf (1977; 2002) stated that Leo was the implicit leader all the time, but he was a "servant first" because that was his nature deep down inside him (p. 21). He also believed that leadership was endowed upon a person who was by nature a servant; that it was something given, or assumed, that could be taken away; his servant nature was the real man, not bestowed, not assumed, and not be taken away; he was a servant first (pp.21-22). Moreover, in addressing issues of power and authority, Greenleaf (1977; 2002) explained that people are beginning to learn how to relate to one another more cooperatively and with less coercion. Relatively, Greenleaf explained the emergence of a new moral principle which holds that the only authority deserving one's allegiance is that which is freely and knowingly granted by the led to the leader in response to, and in proportion to, the clearly transparent evident servant stature of the leader (pp. 23-24). In addition, Greenleaf (1977; 2002) stated that those who adhere to the above principle do not easily accept the authority of existing institutions. Instead, they will only recognize and follow individuals who are chosen as leaders because they proved themselves as trusted servants. Pertinently, Greenleaf asserted that as the above-mentioned principle prevails, the only truly viable institutions that will survive in the future will be those that are solely servant led (p. 24).

Greenleaf (1977; 2002) explicated: “The servant-leader is a servant first; it begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead” (p.27). Further, Greenleaf noted that a servant leader is different from a leader first because the leader-first and the servant-first are two different types. There are shadings and blends between the “leader-first and the servant-first” that exist which are part of the infinite complexities of human nature (p. 27). This author stated the difference exists in the care taken by the servant-first to assure other people’s most critical needs are being served (p. 27). To clarify this point, Greenleaf (1977; 2002) asked the following questions: “Do those served grow as persons? Do they, while being served become healthier, wiser, freer, more autonomous, more likely to themselves to become servant? What is the effect on the least privileged to society? Will they benefit or at least not be further deprived?” (p. 27).

To understand the above questions, Greenleaf (1977; 2002) reiterated that as one begins to serve, one cannot assure that those questions will produce positive results; that the one who sets out to serve has to research, experience, and hypothesize about the probable outcomes but the hypothesis must be left “under a shadow of doubt” and the servant leader must always re-investigate hypotheses and the outcomes (p. 28). Additionally, Greenleaf described the most dependable part of a true servant is when one chooses the noblest hypothesis repetitively and keeps this hypothesis always fresh for further exploration (p. 28). This author also believed that faith is the choice of the nobler hypothesis and not the noblest, since one may never know what that actually is; and explained this belief as follows: “But the nobler; the best one can see when the choice is made. Since the test results of one’s action is usually long delayed, the faith that sustains the choice of the nobler hypothesis is psychological self-insight. That is the most dependable part of the true servant” (Greenleaf, 1977; 2002).

Furthermore, Greenleaf explained that a natural servant is the servant-first, who perseveres and is resilient to re-developing a specific hypothesis on what serves another’s highest priority needs than a leader-first person who always serves out of promptings of conscience or in conformity with normative expectations (p. 28). As a consultant to organizations, Greenleaf (1977; 2002) believed that a servant, that is, a servant leader in an educational organization, always accepts, emphasizes, and does not reject people but sometimes refuses to accept some of the person’s assertiveness or performances as good enough. To understand these servant leadership characteristics, the author gave an example of a college president’s belief that the students may “reject” the instructor and must “not object” to such rejection, but one must not, under any circumstances regardless of whatever they do, ignore, or reject a single student (Greenleaf, 1977; 2002).

### ***1.2. Illuminating and Explicating Outdoor Education Operationally***

In a quantitative study on outdoor education, Boland and Heintzman (2010) explained that outdoor educators oftentimes seek to design programs that influence participants’ daily lifestyles, especially environmental behaviors. The authors added research on the impact of outdoor education programs on environmental behaviors has typically focused on schoolchildren and adolescent learners. The purpose of this study was to investigate the perceived impact of a university outdoor education program on the environmental behaviors of the program participants; in-depth interviews were conducted with six university students six months after they completed a 14-day summer outdoor education course that covered: social, organizational, technical, environmental, and educational topics associated with group living, ecology and summer camping skills (Boland and Heintzman, 2010). The result revealed that almost all participants reported that the course had some impact on their environmental behaviors; and the most frequently mentioned changed behaviors were increased participation in outdoor activities, participation in communal environmental action, and environmental behavior transference to daily life.

In Avci and Gumus’s (2020) study, these authors explicated that the realization of the aim of education to bring individuals to life will be possible through the participation of students in real life, making observations and investigations, being in different places, and interacting with the society in which they live. The authors added that it is thought that an understanding of teaching, in which the student takes an active role in the learning process, learns by doing, living, firsthand and the knowledge learned is permanent, is the most effective method in education. One of the approaches in which this understanding comes to life is the “outdoor education” method, which argues that knowledge must be learned through first-hand observation and experience outside the classroom, in order, to enrich, enliven and complete the curriculum (Eaton, 1998) (Eaton, 1998, in Avci and Gumus, 2020).

### ***1.3. STEM Education Defined and Explained***

In a research study, Gonzalez and Kuenzi (2012) illumined the term “STEM Education” a refer to teaching and learning in the fields of science, technology, engineering, and mathematics, typically including educational activities across all

grade levels, from pre-school to post-doctorate, and in both formal and informal classroom settings (Gonzalez and Kuenzi in Kennedy and Odell, 2014). Additionally, Kennedy and Odell (2014) echoed while scientific inquiry involves the formulation of a problem that can be solved through investigation, engineering design involves the formulation of a problem that can be solved via constructing and evaluating during the post design stage. STEM education brings these two concepts together through all four disciplines.

Pertinently, the authors emphasized that Bybee (2013) [Bybee in Kennedy and Odell (2014)] transparently articulates that the overall purpose of STEM education is to further develop STEM literate society and his definition of “STEM literacy” refers to an individual’s capabilities as follows: (1) knowledge, attitudes, and skills to identify questions and problems in life situations, explain the natural and designed world, and draw evidence-based conclusions about STEM-related issues; (2) understanding of the characteristics features of STEM disciplines as forms of human knowledge, inquiry and design; (3) awareness of how STEM disciplines shape our material, intellectual, and cultural environments; and (4) willingness to engage in STEM-related issues and with the ideas of science, technology, engineering, and mathematics as a constructive, concerned, and reflective citizen.

#### ***1.4. Defining and Explaining Students’ Environmental/Ecological Behaviors***

Two researchers, Boland and Heintzman (2010) reiterated that outdoor educators often seek to design programs that influence participants’ daily lifestyles, especially environmental behaviors. Research on the impact of outdoor education programs on environmental behaviors has typically focused on schoolchildren and teenagers. The purpose of this study was to investigate the perceived impact of a university outdoor education program on the environmental behaviors of program participants. In-depth interviews were conducted with six university students six months after they completed a 14-day summer outdoor education course that covered: social, organizational, technical, environmental, and educational topics associated with group living, ecology and summer camping skills (Boland and Heintzman, 2010). Further, the result revealed that, almost, all participants reported that the course had some impact on their environmental behaviors; and increased participation in outdoor activities, participation in communal environmental action, and environmental behavior transference to daily life were the most frequently mentioned changed behaviors.

#### ***1.5. Defining and Explicating Students’ Academic Success***

To focus on Afghan students’ academic success, Mann (2021) asked educators: What do Afghan need from educators? To answer this question and justify the author’s perspective, Mann (2021) clarified that North Carolina is home to over 40,000 people who relocated to the U.S. as refugees. Mann (2012) defined a refugee as someone who has been forced to flee his/or her country because of persecution, war, or violence, etc. and has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group. The Triangle is a large hub or refugee relocation. As of 2017, refugees and immigrants make up more than 10% of the population of urban counties in North Carolina. Refugees and immigrants comprise 13.9% of Durham’s population and 13.3% of Wake County’s population. When international crises hit, the author stated: “we feel the impacts in North Carolina and feel them acutely in the Raleigh/Durham area. We see the impacts on our students” (Mann, 2021).

Additionally, Mann (2021) reached out to several former students who are Afghan refugees and current college students in North Carolina. The author asked if they would like to discuss with her what they need their teachers to know, what they wish their teachers would do, and how their teachers could best support them. They collectively decided that they should meet with her virtually as a group to come to a consensus; those who could not attend the meeting sent her their thoughts via email and text message. The following listing is their consensus:

1. Teachers should educate themselves about Afghan history and the current situation in Afghanistan.
2. Teachers should talk about this major world event with their class, just like they would any other major news even. Don’t ignore it.
3. Teachers should check on the well-being of their Afghan students by inquiring, “How are you and your family doing?” Don’t pry into specifics but show genuine concern and empathy.
4. Teachers should give a message of hope and encouragement about the future of Afghanistan.
5. Teachers should let their students know that they can come talk to them if they are struggling emotionally or academically. School counselors and social workers could consider creating support groups for students experiencing a sense of loss.
6. Teachers should help their Afghan students to find healthy ways to spend their time. Encourage them to participate in extracurricular activities at school (sports, theatre, debate, interest clubs, etc.) and help them get plugged in.



7. Teachers could and should be advocates and activists. Teachers could petition for women's rights in Afghanistan or email their legislators and ask them to encourage expediency in the Special Immigrant Visa program.
8. Teachers could consider giving money to the International Rescue Committee to provide emergency life-saving aid to the Afghan people.

Furthermore, Mann (2021) reiterated that young Afghan men and women who met and wrote to her overwhelmingly expressed a feeling of isolation and longing to have others acknowledge their suffering. They hurt for their country and worry for their families and friends still in Afghanistan. Mann (2021) added, as of today, calls are not going through and many questions and concerns remain; and these students find themselves struggling with depression and anxiety—incessantly checking their social media feeds for information from inside Afghanistan. For example: Finding the focus needed to complete organic chemistry homework and finish mechanical engineering assignments is difficult, but one young Afghan student found solace in her father's words of wisdom and encouragement. He told her, "You have to study for a better future to represent the girls in Afghanistan who don't have the opportunity for a better future right now" (Mann, 2021).

The author hopes that as educators, teachers will each take account of the students before them and seek to know their Afghan students better throughout this new school year. Mann (2021) expressed as school doors open and students arrive, may teachers be attentive to these students needs. Some of these students will be sitting in the classrooms with heavy hearts and overburdened minds; and it is this author's sincere hope that teachers' instructional practices will lean into and not away from them (para. 7).

#### ***1.6. Sharing My Valued Helping and Teaching Experiences in the Process of Healing***

One interesting cultural dilemma that a vibrant young Afghan female student, named Salma (not her real name), shared with me (she enrolled in my biology class). One day during lunch break, she asked me to advise her on what to do because her parents accepted dowry (money and precious pieces of jewelry) from one of her suitors, who is a wealthy medical Afghan doctor and many years her senior. This problematic situation involved her parents forcing her to marry him which left her no choice but to run away from home and stopped attending school. One morning, this Afghan doctor, knocked on my classroom door, looking for Salma. I told him I had not seen her lately, and she stopped attending school. This situation, from what I heard from the other Afghan students in the school site, Salma had no choice and ended up marrying this doctor to save her parents' faces from embarrassment which is an important cultural norm in Afghan society. I never heard from her since then.

Another fascinating story, Mahmoud (not his real name) who immigrated from Yemen enrolled in my Earth Science class, was a jolly and friendly student to everybody in class. He just loved our routine outdoor walks, collecting and identifying the mineral contents and geological features of nearby rock outcrops, roadcuts, national park (e.g., Golden Gate Park, Mt Tamalpais, Marin Headlands, Alcatraz). One afternoon, after class session, he came to see me, and asked me to sign an excuse slip to visit Yemen with his family. When he came back from a one-month vacation in Yemen, he brought back a beautiful green rock from their backyard in Yemen as a precious gift to me which I shared in class. Additionally, Mahmoud developed a closed friendship with a charming female student named Fatimah (not her real name), an immigrant from Pakistan, in my class and the relationship got serious in which they kept it a secret from their parents. One lunch break time, Fatimah came to see me worried about the relationship and scared of her parents' reaction just in case they come to know the relationship. I told her, she is a very smart student and a potential geologist if she will just concentrate more on her studies than getting serious with her relationship with Mahmoud. I advised her just, for them, to stay good friends while they are in college, and they decide later in their lives as adults if they are still meant for each other. It worked!

Moreover, the three immigrant students, who were brothers and a sister, from Jordan in the same Earth Science class, immigrated with their family to the United States as traders, founded and owned a prosperous Mediterranean restaurant in the heart of San Mateo, California. They used to bring me delicious Mediterranean sandwiches for lunch. Unlike students from Afghanistan and Iraq, the students from Jordan, like the students from Saudi Arabia, came to the United States as entrepreneurs, with their wealth to invest in lucrative businesses like restaurants, gas stations, hotels, etc. in big cities like New York City, San Francisco City, and others.

The above narratives are unique examples of one-on-one spontaneous informal conversation mentorship occurrences in the healing and learning process during our Math and Earth Sciences outdoor education learning activities during the school year. In addition, during outdoor walks, the students carried their cameras to take pictures of the flowering wild plants, outcrops, invasive species (e.g., green crabs), thistles, etc. as they worked collaboratively in groups in their

designated areas to examine. Additionally, for their project requirement, they took down notes of their observations, findings, and captured the images of the wildflowers and weeds species they came across to observe during the outdoor walks by sketching and drawing them. The students independently visited the assigned area to continue their work with signed parental consent. Parental involvement was an effective program in the school site through the years, being actively involved in the educational journey of their children.

These outdoor science education experiences had motivated the students to become environmentally sensitive as servant-student leaders, cared and explored the art of camping, visiting national and state parks, taking photos of panoramic views, wild weeds & flowers of California. And discovered thriving species in tidepools, such as the green-crabs that invaded San Francisco Bay, the sand-crabs, snails, clams, algal species, and others. Furthermore, the Earth Science students learned to identify and recognize, by inspection, precious and semi-precious rocks and minerals, anatomy of the cross-section view of the Earth, all about volcanoes, mountain-building, plate tectonics, outcrops, rock formation, etc. Specifically, some group of students became active advocates of environmental awareness projects such as reforestation, cleaning up the community neighborhoods, ocean clean up, etc.

Finally, these students became community leaders and advocates of outdoor education, environmental awareness via organizing workshops, camping programs for their neighborhoods with friends, family, and the community at large. For example, camping workshops and camping activities at Marin Headlands; saving the stranded sea mammals, dolphins, boat fishing activities, observing the whales, dolphins, sea lions, seal, manatee, and other sea mammals. After graduation from high school, the students pursued careers of service to others such as: (1) environmental engineering, dentistry, nursing, medical doctors, teachers, medical technicians, pharmacology, broadcasting, geosciences, joining the marine, US Navy, Air Force, some went direct to business entrepreneurship, and others.

## 2. Literature Review

In one study, Becker *et al.* (2017) conducted an extensive systematic review on the effects of regular classes in outdoor education settings on students' learning, social and health dimensions. According to the authors, participants in Outdoor Education Programmes (OEPs) presumably benefit from these programmes in terms of their social and personal development, academic achievement and physical activity (PA). The aim of this systematic review was to identify studies about regular compulsory school- and curriculum-based OEPs, to categorize and evaluate reported outcomes, to assess the methodological quality, and to discuss possible benefits for students. Methods: The researcher searched online databases to identify English- and German-language peer-reviewed journal articles that reported any outcomes on a student level; two independent reviewers screened studies identified for eligibility and assessed the methodological quality (Becker *et al.*, 2017). Results: Thirteen studies were included for analysis. Most studies used a case-study design, the average number of participants was moderate [mean valued (M)] = 62.17; standard deviation (SD) = 64.12; and the methodological quality was moderate on average for qualitative studies (M = 0.52; SD = 0.11), and low on average for quantitative studies (M = 0.18; SD = 0.42). Eight studies described outcomes in terms of social dimensions, seven studies in learning dimensions and four studies were subsumed under additional outcomes, i.e., PA and health. Eleven studies reported positive, one study positive as well as negative, and one study reported negative effects. PA and mental health as outcomes were underrepresented. The researchers concluded that tendencies were detected that regular compulsory school, and curriculum-based learning OEPs can promote students in respect of social, academic, physical, and psychological dimensions, and very little is known concerning students' PA or mental health (Becker *et al.*, 2017). The authors recommend conducting more quasi-experimental design and longitudinal studies with a greater number of participants, and a high methodological quality to further investigate these tendencies.

In another study, Avci and Gumus (2020) aimed to determine the effects of the implementation of activities based on outdoor education in social studies teaching on students' academic achievement and their level of knowledge recall. In this study, semi-experimental design with pretest-posttest control group was used. This study was conducted with the study group determined by selecting the appropriated sample; and the study group for the 2018-2019 academic year was composed of two primary school fourth grade students, one from a public school (n = 33) and one from a control group (n = 31) in Buca district of Izmir province (Avci and Gumus, 2020). During the application process, fourth grade Social Studies lessons on "People, Places, and Environment" learning subject areas were covered for 6 weeks with outdoor education activities and outdoor teaching method, social studies lesson curriculum content and activities in control group. As a data collection tool, the Academic Achievement Test created by the researcher within the scope of the primary school fourth grade "People, Places and Circles" learning attainment areas was used as pre-implementation and post-implementation (Avci and Gumus, 2020). Additionally, the Academic Achievement Test was used as a persistence test to measure students' level of recall of their knowledge four weeks after applications were finished. Statistical

solutions of the data were made with descriptive statistics, t-test for independent samples, and two-factor ANOVA for mixed measurements. The findings revealed academic success and retention levels of the experiment group students, who took outdoor education activities and outdoor education social studies courses, were significantly higher than those of the control group students, who performed courses according to the curriculum and activities of social studies courses in the classroom environment (Avcı and Gumus, 2020). The result determined that the implementation of outdoor educational activities in the teaching of social studies courses increased the success levels of the students and positively affected their level of recall their knowledge.

In Cilinger's (2016) qualitative study, the author worked on a project which is an analysis of the perception of postgraduate students of "Outdoor Environmental Education and Outdoor Life Master Program" regarding the concept of "Outdoor Education." The postgraduate students' perceptions were introduced and elaborated through interviews with nine Master students (MS) from September 2013 until June 2014. Also, the author explained that the 9 MS participants were interviewed individually, and the qualitative data was phenomenologically analyzed and interpretations of the findings were demonstrated to the readers (Cilinger, 2016). At the end of this study, the author presented five different themes obtained during this study and these themes are as follows: (1) the benefits of outdoor education, (2) the practicality of outdoor education, (3) the effects of outdoor education, and (4) issues within outdoor education. Based on these themes the author argues how perspectives of international students vary depending on their culture.

In a research study, Harun and Salamuddin (2014) emphasized that outdoor education is a holistic form of education which aids in overall well-being of adolescence, including academic, physical, emotional, social, and psychological well-being. The aim of this study was to see whether outdoor education promotes social skills and assess its effects on participants. The research sample included 671 adolescents attending a five-day residential outdoor education program. The study used Kolb's Cycle of Learning through Experience as the theoretical framework while the research framework is adapted from Carver's Outdoor Education Framework. The social skills measured were cooperative work, leadership ability, and ability to cope with changes. Descriptive and inferential statistics used were *t*-test, Cohen's *D*, multiple analysis of variance, and post hoc test. The result showed that the outdoor program had a significant influence for all the constructs involved in this study. Cohen's *D* showed that the treatment contributes greatly to leadership ability (60%), and ability to cope with changes (61%). Wilks' lambda in multiple analysis of variance showed that the outdoor education module contributes significantly high  $F = 30.78$ ,  $p < 0.05$ ;  $\eta^2 = 0.57$  to changes in social skills. Analysis of variance showed that there is a retention period whereby the changes in social skills examined remain in the participants for a certain period of time. This retention of changes in social skills is significant for all factors studies which are cooperative teamwork, leadership ability, and ability to cope with changes.

In Konopacki's (2016) project study, this author focused on involving students more in the outdoors as part of their regular classroom curriculum. Outdoor educational activities, as well as guest speakers from the community were used to supplement current curriculum. The purpose of the study was to investigate student motivation and attitude towards learning science, their opinions of being outdoors and outdoor learning, and level of concern for the environment.

Students participated in water quality monitoring at a local stream, learned about native Montana. The results showed that student interest and attitudes towards the outdoors, as well as test scores, increased significantly after being exposed to outdoor learning.

In Pryor *et al.* (2005) research work, these authors explained that together outdoor education and bush adventure therapy can be seen to constitute a population-wide health intervention strategy. Whether in educational or therapeutic settings the intentional use of contact with nature, small groups, and adventure provides a unique approach in the promotion of health and wellbeing for the general population, and for individuals with identified vulnerabilities (Pryor *et al.*, 2005). The authors explained that this study explicitly emphasizes human and social health however an integral assumption is that a healthy and sustainable environment is dependent on healthy human relationships with nature. The authors invited educators and bush adventure therapy practitioners to examine the proposition that healthy interaction with nature can create a unique stream of socio-ecological interventions (Pryor *et al.*, 2005). The study provided a spectrum of outdoor adventure programs, allowing outdoor educators and bush adventure therapy practitioners to locate their work according to program context and aims, and participant aims and needs.

Additionally, Pryor *et al.*'s (2005) study examined the use of outdoor education and bush adventure therapy as the basis for a cross-sectoral approach to health. The authors explained that with the emphasis on social connection and the natural environment, these endeavors can be seen to constitute a coherent socio-ecological approach to health. In this study, outdoor educators and bush adventure therapy practitioners are encouraged: (1) to identify their own role within the spectrum of socio-ecological health approaches; (2) to examine health alongside educational outcomes for participants;

and (3) to explore new ways of articulating the benefits of programs towards an integrated approach to human, social and environmental health. Moreover, Pryor *et al.* (2005) reported when small groups of people adventure together in natural environments, the health and wellbeing of humans, communities and the natural environment are enhanced. And with collaboration between outdoor education and bush adventure therapy professionals would enhance the potential for a socio-ecological stream of health and wellbeing interventions that are effective, affordable, and accessible.

Moreover, Torkar's (2014) study provides evidence of the significant life-experiences that have influenced teachers' attitudes towards the environment and present their teaching practices within environmental education. In this study, three groups of teachers (preschool, primary school, and biology), working in preschools and in nine-year long compulsory basic schools in Slovenia completed questionnaires. Findings were generalized against bodies of research discussing significant life experiences and recommendation concerning environmental education improvement (Torkar, 2014). Moreover, the author explicated that enjoyment of the outdoors, especially in the childhood, attitudes of parents, life in the countryside, experiences with animals and plants, solitude of remote places, education and experiencing negative environmental changes, all had an influence on the teachers' care for nature (Torkar, 2014). And experiences with organisms and education were more influential life experiences for biology teachers than for preschool or primary school teachers (Torkar, 2014). Additionally, the teachers emphasized four teaching practices important for environmental education, namely: (1) direct experience of nature, (2) discussions about environmental problems, (3) active participation of students in environmental activities and the importance of teachers as role models. Furthermore, Torkar (2014) reported that the importance of students' interactive participation in environmental activities has been under-emphasized, particularly among biology teachers in the study. Instead, the teachers have encouraged them to analyze and discuss environmental problems rather than empower them in the extension of collective pro-environmental actions, which would provide them with necessary experiences in governing processes enabling them to take an active societal role in the community (Torkar, 2014).

Based on the above review of pertinent literature, it is evident that outdoor education experiences positively affect students' ecological awareness, academic achievements, and trigger their desire to serve as servant-leader learners to the community and society where they live in with their families.

### 3. Conclusion

This reflection sought to highlight the effectiveness of outdoor education experiences on students' environmental or ecological behaviors, academic success, and servant leadership in the healing, helping, learning, and teaching journey in both indoor and outdoor learning environments. In doing so, I defined and explained servant leadership; illuminated and explicated outdoor education operationally; defined and explained STEM education; defined and explained environmental or ecological behaviors of students; defined and explained students' academic success; shared my valued helping and teaching experiences in the students' healing and learning journey; reviewed pertinent literature; and concluded this reflective writing. Based on the preceding research analyses, it is evident that outdoor education learning experiences positively affect students' ecological behaviors, academic success, and servant leadership in their educational journey in public school as these student population all graduated high school and pursued their college education, joined the military, and other careers of service to the significant others in society. Going through and writing this reflection was an enlightening experience for me as I looked back and reminisced through my valuable teaching and helping experiences as a schoolteacher in the Bay Area's public school system in the 90s. I truly believed it was a transcendent calling for me to serve in those days, to help and make a difference in the lives of these global young learners in the 90s who were displaced by global perturbations in their respective countries of origin; and in desperation, they had no choice but to leave their countries behind and migrated to the US to seek a better life. These immigrants trusted and believed in America as a better place to live—to achieve their dreams of living in peace, tranquility, and prosperity with their children and families in their chosen community in the State of California.

### References

- Avcı, G. and Gumus, N. (2020). [The Effect Of Outdoor Education On The Achievement And Recall Levels Of Primary School Students In Social Studies Course. \*Review of International Geographical Education\*, 10\(1\), Special Issue, 171-206.](#)
- Becker, C., Lauterbach, G., Spengler, S., Dettweller, U. and Mess, F. (2017). [Effects of Regular Classes in Outdoor Education Settings: A Systematic Review on Students' Learning, Social and Health Dimensions. \*International Journal of Environmental Research and Public Health\*, 14\(5\), 485. Retrieved from: \[ncbi.nlm.nih.gov/pmc/articles/PMC5451936/\]\(https://ncbi.nlm.nih.gov/pmc/articles/PMC5451936/\)](#)



- Boland, H. and Heintzman, P. (2010). *The Perceived Impact Of A University Outdoor Education Program On Students' Environmental Behaviors*. Retrieved from: [https://www.nrs.fs.fed.us>otr>05-boland-p-66\[pdf\]](https://www.nrs.fs.fed.us>otr>05-boland-p-66[pdf])
- Cilinger, F. (2016, April 4). *Outdoor education perspectives: International insights within the field* (unpublished master's thesis). Linköping University, Department of Culture and Communication National Centre for Outdoor Education.
- Greenleaf, R.K. (1977/2002). *Servant Leadership: Journey into The Nature of Legitimate Power and Greatness*. Mahwah, NJ: Paulist Press.
- Gonzalez, H.B. and Kuenzi, J.J. (2014, January). Science, Technology, Engineering, and Mathematics (STEM) Education: A Primer. *ResearchGate* Retrieved from: [researchgate.net/publication/292937643\\_Science\\_technology\\_engineering\\_and\\_mathematics\\_STEM\\_education\\_A\\_primer](https://www.researchgate.net/publication/292937643_Science_technology_engineering_and_mathematics_STEM_education_A_primer)
- Harun, M.T. and Salamuddin, N. (2014). Promoting Social Skills Through Outdoor Education And Assessing Its' Effects. *Asian Social Science*, 10(5), 71-78.
- Kennedy, T.J. and Odell, M.R.L. (2014). Engaging Students in STEM Education. *Science Education International*, 25(3), 246-258.
- Konopacki, J.R. (2016, July). *Outdoor Education: The Effects of Outdoor Learning on Student Success* (Unpublished Master's Thesis). Bozeman State University, Bozeman, Montana.
- Madhani, A. (2021). *States Learning How Many Afghan Evacuees Coming Their Way*. Retrieved from: [post-gazette.com/news/world/2021/09/15/states\\_learning\\_how\\_many\\_Afghan\\_evacuees\\_coming\\_their\\_way/](https://www.post-gazette.com/news/world/2021/09/15/states_learning_how_many_Afghan_evacuees_coming_their_way/)
- Mann, J.C. (2021, August 25). *Perspective: What Afghan Students Need From Educators*. Retrieved from: [ednc.org/perspective-what-afghan-students-need-from-educators/](https://www.ednc.org/perspective-what-afghan-students-need-from-educators/)
- Norman, Z.D. (2018). *Servant-Multicultural Leadership: An Effective Instructional Approach in Higher Learning*. Available at SSRN: <http://ssrn.com/abstract=3126621>
- Pryor, A., Carpenter, C. and Townsend, M. (2005). Outdoor Education and Bush Adventure Therapy: A Sociological Approach to Health and Wellbeing. *Australian Journal of Outdoor Education*, 9(1), 3-13.
- Torkar, G. (2014). Learning Experiences that Produce Environmentally Active and Informed Minds. *NJAS- Wageningen Journal of Life Sciences*, 69(2014), 49-55.

**Cite this article as:** Zoncita D. Norman (2021). Exploring the Effect of Outdoor Education Experiences on Students' Environmental Behaviors and Servant Leadership in Public School Science Education. *International Journal of Education and Teaching*, 1(4), 21-29. doi: 10.51483/IJEDT.1.4.2021.21-29.