European Economic Letters
ISSN 2323-5233
Vol 13, Issue 4 (2023)
http://eelet.org.uk

Protecting the Environment and Promoting Mental Health - A Case for Early Educational Intervention

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Abstract

Belief systems are developed from childhood through various internalized stimuli that affect our minds and are crystallized to form behavioral repertoires. These belief systems can be formed through the educational process and imbibed as the student develops. What we believe and practice in adult life stems from what we learned as young people. Therefore, environmental education needs to be invested among children at school inception**.** This can occur through the collaboration of content, pedagogy and exposure. Research also indicates that exposure to natural environments provide mental health benefits like reduced symptomology of depression and anxiety and improved cognition in children with ADHD besides lower levels of stress. This study proposes early educational intervention to promote environmental protection attitudes and parallel mental health through educational interaction. The paper also tries to develop a practical and mental health-based framework for promoting environmental education and mental health.

Keywords: environmental education, pedagogy, environmental protection, mental health

INTRODUCTION

The human endeavor to find serenity and peace and the quest for meaning and purpose has always been part of our history. In addition, we also have tried to discover the mysteries of life in the vast expanse of the universe. Diverse methods of exploration have been used from gazing at the stars and studying the movements of the planets or diving into the depths of the ocean or even deeper by studying the innermost core of the earth or the atom. Yet, even as humanity is becoming engrossed in these kinds of scientific pursuits, explorations and discoveries, the essence of life- nature's creative beauty is very often lost and/or ignored. The inventive and creative mind on the one hand has made innovations in life but has also knowingly and unknowingly had a negative effect on life. A somewhat rash use of knowledge and abilities have also resulted in animals becoming extinct, denuded forests and even outer space being filled with debris. A vast majority of us are immersed in living synthetic lives engulfed in a plastic world. The words of John Muir, more relevant today than ever before, ignored at our own peril have not been considered seriously by modern and post-modern man.

A tragedy looming large over human destiny is the effect of man-made human disasters that have created environmental conditions that could make the earth unlivable. These include disasters like the Chernobyl and Bhopal Gas tragedy, global warming due to emission of green house gases, devastation of the Amazon basin, oil spills that have destroyed vast ocean life, random killing of animals that have resulted

in the extinction of animals like the dodo and many more animals are on the endangered list, pollution due to industrial emissions and automobile emissions, spillage of industrial wastes into water tracts and so on. The excessive use of chemical fertilizers, pesticides, hormone injected food, and artificial flavorings in food have increased the incidence of cancer, pulmonary conditions and other diseases to the extent that nearly every family has at least one person affected by these maladies. All of these point towards a bleak future for humanity unless radical steps are taken to change direction.

The countdown has already begun and the physical effects (global warming, climate change, floods, earthquakes, etc.) human health effects (cancer, and other diseases) and psychological effects (increased incidence of depression and other mental illness) due to the irresponsible behavior of humankind is proving very costly. A quotation from "Chief Seattle's letter (2015) to the Government of US" during the beginning of 19th century though not fully authenticated captures the spirit of human relationship to nature, " we know the sap which courses through the trees as we know the blood that courses through our veins. We are part of the earth and it is part of us. The perfumed flowers are our sisters. The bear, the deer, the great eagle, these are our brothers. The rocky crests, the dew in the meadow, the body heat of the pony, and man all belong to the same family".

The need to be in tune with nature has to be ingrained into the very psyche of humanity. This calls for a belief system about nature that would be as much part of every human being as the need for drinking water to quench thirst is part of our behavior. In the words of Greta Thunberg, she asks the older generation, 'How dare you?' She asks in relation to the exploitation of nature. She opined that "her generation may not have a future anymore, because that future was sold so that a small number of people could make unimaginable amounts of money" (Thunberg, 2019). Consciousness regarding the need to protect nature and life has become so strong that in 2019 students from hundreds of cities gathered to protest to raise consciousness about climate change (Suyin, 2019). The development of a belief system and its application becomes imperative for life to be sustained and to be qualitatively good. It is the lack of a proper belief system that prevents the development of a culture of sustenance of the environment and promotion of life. This paper lays out a method for beliefs about the environment to be ingrained at a young age and develops the specific educational approaches that can be used by the teacher in this process. In addition, the belief system that sustains the environment also results in the development of stability in mental health, the absence of which is devastating human life.

The belief system about the need to protect the environment is essential and critical. Toffler (1970), in his diagnostic book 'Future Shock', speaks of how "vast energies are applied to cranking out Industrial Men-people tooled for survival in a system that will be dead before they are" (p.361). He also reported about how goals set should include participation of those affected (p.440) change is essential (p.439) and finally the need for a 'halt to the runaway acceleration (p. 439). We are a runaway society reaching where we do not know. Belief systems are developed from childhood through various internalized stimuli that affect our minds and are crystallized to form behavioral repertoires. These belief systems can be formed through the educational process and imbibed as the student develops. What we believe and practice in adult life stems from what we learned as young people.

UNESCO emphasizes need for environmental education which is essential for "safeguarding future global developments of societal quality of life". This can only be done among other things through the environment protection (UNESCO, 2014a). According to Verma and Dhull (2017), investigations must be intended to best captured by the understanding the "environmental education is not merely to inspire

environmental stewardship and responsible citizenship, but also to protect today's 'de-natured' and increasingly unhealthy society". Hence the present study entitled as 'Protecting the environment and promoting mental health - A case for early educational intervention'**.**

BELIEFS AND BEHAVIOR

Beliefs and behavior are inter-related. Beliefs direct behavior. It is our belief that snakes are poisonous that makes us wary and fearful of snakes leading us to kill snakes. Our behavior is conditioned by our beliefs. In relation to the environment, beliefs have to be ingrained into children at a very early age for them to be effective in protecting it. The gains would be many-fold, and we would have a new generation that acts consciously to protect nature, resulting in sustenance of nature and a reduced incidence of physical and psychological disorders and illness.

"All that we are is the result of what we have thought. The mind is everything. What we think, we become."- Buddha

Gandhi has said, *"*your beliefs become your thoughts, your thoughts become your words, your words become your actions, your actions become your habits, your habits become your values, your values become your destiny"

Beliefs help us in creating a moral framework. They enable us to prioritize and create preferences as also provide a basis for relationships. At the same time beliefs can also be upsetting. They can "manifest as a prejudice or can even persuade someone to blow up themselves and others for some cause" (Jha, 2005). According to Peter Halligan, a psychologist at Cardiff University, states that "though beliefs are a very powerful component of human nature they have been neglected" (Jha, 2005). Different kinds of agents have capitalized in beliefs for their own purposes and are most likely to be learned from the prevailing culture. Kathleen Taylor, (Jha, 2005), a neuroscientist at Oxford University equates beliefs and memories stating that events stimulate neurons to fire and the more times the neurons fire in a particular pattern, the more it strengthens the memory, which becomes a belief while as Halligan, calls a belief as the "mental architecture of how we interpret the world" (Jha, 2005). Thus beliefs can be ingrained and developed to have extremely positive results.

Our belief systems have developed from our childhood, acquired through our readings, exposure to various stimuli and through the teaching or learning process. The teaching or learning process occurs most importantly in the school and is the best place for preparing a generation that believes in environmental principles. It is in this context that environmental education has been introduced in school curriculum to create awareness regarding the environment at the very young formative age of students, thereby trying to revive the neglected aspects of environment. (Geetha & Suresh 2015).

Children, as they learn can be guided to become promoters of life. Their beliefs about the environment can be positively nurtured for promoting environmental awareness and for creating a positive attitude toward the environment. This can also have a positive effect on their mental health. This teaching-learning process has to be collaborative. There should be content that increases the knowledge base and pedagogy where students are collaboratively involved, "to encourage behavior change and action" (Thomas, 2005).

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ISSN 2323-5233
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http://eelet.org.uk

ENVIRONMENT AND MENTAL HEALTH

The study of the importance of the environment in human life is life sustaining. In addition, research has shown that environmental education promotes qualities of "critical thinking, problem-solving, leadership characteristics, high academic engagement, and healthy lifestyles" in students (Archie, 2003). Meetings with the natural world are quite likely to have a big good impact on individual's health and well-being on both a physiological and psychological level (Burls 2007b; Ewing, MacDonald, Taylor, & Bowers. (2007). In fact, for proper development to occur, "… stimulation and experience are important in the early years of life". Early intellectual stimulation is crucial for children's development, but later experiences are also required to preserve that strong start. If this stimulation is given where it is missing, intellectual skills advance. It simply means that early experience is not always destiny and that change is just as much a feature of human brain as stability. This does not imply that there is endless flexibility (Bjorklund, 2000)**.** Through horticulture programs or environmental volunteering, people with disabilities might feel empowered, relieve stress, and open up new social opportunities. (Burls, 2007a).

Shinrin-yoku, a Japanese therapeutic technique that involves walking and taking in the fresh air of the forest, has been demonstrated to encourage both physical exercise and mental relaxation. Yamaguchi, Deguchi, & Miyazaki. (2006). According to the study, healthy adults who live in forest areas experience less stress related to their environment. The importance of animals in human life can be visualized from the serendipitous experience of Boris Levinson. An uncommunicative child when left alone with a dog, Jingle, was seen talking to the dog serendipitously (Reichert 1998), opening up the area of animal assisted therapy (AAT) (Reichert, ,1998). Following therapy with dogs, a small study sample of 10 children with pervasive developmental problems between 2.5 years and 6.5 years of age demonstrated behavioral and social gains (Martin and Farnum, 2002). Dogs were used in a different study to help two boys with emotional and mental health issues learn, and the findings were promising (Kogan, Granger, Fitchett, Helmer, & Young, 1999). The lads talked with the animal handler about the week's good and bad incidents in 10 to twenty minute sessions. The dog was also trained for a demonstration to the students, which took some time. The boys then displayed an increase in self-assurance, focus in class, decreased hyperactivity, social skills, and bad behaviour.

According to the World Health Organization (WHO, 2009), depression will be the leading cause of disability in the developed world by 2030. In terms of societal and economic costs, it comes in second place only to ischemic heart disease. Asthma, arthritis, diabetes, strokes, and cardiovascular disease are just a few of the physical ailments that depression has been linked to as risk factors (Ostir et.al, 2001).

Exposure to natural areas related to improved mental health and lower stress levels (Thompson et al., 2012), as reduced symptomatology for depression and anxiety (Beyer et al., 2014). Children with attention deficit disorders may benefit cognitively from time spent in nature (Taylor and Kuo, 2009), and individuals with depression (Berman et.al, 2008). Natural environments have 'restorative properties' and even passive perception of natural scenes strengthen mental health.

Kaplan and Kaplan (1989) developed the " attentional restoration theory". It states that urban environments create surplus of bottom-up stimulation which results in "dramatically capturing attention resulting in constant stimulation". Continuous stimulation wears down cognitive function over time because it requires people to engage their attention to combat its effects (hard fascination). However, natural settings produce a gentle interest where the scene's substance instantly grabs the viewer's attention and makes them feel good. Directed attention can be recovered in natural settings. The executive function

and the self-regulation processes in cognition are both supported by directed attention (Kaplan and Berman, 2010). Natural habitats provide restorative qualities that include the feeling of 'being away', a sense of reprieve from the demanding demands of daily life, as well as the extent to which a perception of vastness and connection in a place helps inspire similar feelings of 'being away'. Studies supporting ART have revealed that spending time in natural surroundings enhances performance on tasks requiring attention (Berman et al., 2008).

A CONFLUENCE OF BELIEF SYSTEMS, EDUCATION AND MENTAL HEALTH

Belief systems can develop in childhood through various stimuli that affect our minds and are crystallized to form behavioral repertoires. These belief systems can develop through education and should be imbibed by children at school. This should happen through the collaboration of content, pedagogy and exposure. This paper proposes early education programs for children to inculcate behavior that is protective of the environment and in tandem also develops harmony with nature for promoting mental health.

Educational theories that can be used to develop a pedagogy for environmental protection and mental health development

Theories generally understood as helpful in early childhood education are the behaviorist theory and the developmental theory.

Behaviorist theory

According to it, behavior can be both learnt and unlearned. It is possible to substitute acceptable behavior with unacceptable behavior. The reactions to a child's behavior have a significant impact on how the child behaves in the future. Pedagogical strategies based on behaviorist theory include: " avoiding reinforcing inappropriate behaviour or removing children who are acting inappropriately; drawing children's attention to the consequences of their behaviour" ; and rewarding appropriate behaviour with praise or more concrete rewards like star charts (Child Australia, 2016).

Developmental theory

The environment, genetics, and context all have a role in a child's development. Exploration and play with tangible items help children learn. The dimensions of physical, cognitive, emotional, and social growth are interconnected. The environment should be enhanced with routines and play-based activities related to appropriate goals of learning for children's individual and holistic development. Children should be observed to understand and interpret their growth and individual distinctions (Child Australia, 2016)

A third theory developed by Arthur W. Staats, *(*Psychological behaviourism, 2016) has projected psychological behaviorism - a "paradigmatic behaviorist theory". According to this theory, personality is made up of a variety of learned behavioral patterns that are influenced by an individual's biology, environment, intellect, and emotions.

His theory holds that personality is made up of three behavioral repertoires: the sensory-motor repertoire, which includes fundamental sensory-motor skills as well as attentional and social skills; the language-cognitive repertoire, which includes receptive language, expressive language, and receptive-expressive

language; and the emotional-motivational repertoire, which includes both positive and negative patterns of emotional reaction that guide a person's overall behaviour.
An infant has no basic behavioral repertoires (BBR). The youngster learns to respond correctly to numerous situations as a result of acquiring these skills through complicated learning. Basic conditioning is all that learning initially entails, but when the kid acquires repertoires, their learning progresses thanks in part to functional repertoires. One experiences the world based on one's repertoires. The BBR is primarily dependent on the biological organism of the person, resulting in new neural connections in the brain. Therefore, a person's behaviour depends on their BBR and their current situation in life and further it influences the child's behaviour in his/her life situations *(*Psychological behaviourism, 2016).

PEDAGOGY FOR ENVIRONMENTAL EDUCATION

"Pedagogy is an encompassing term concerned with what a teacher does to influence learning in others. It could be considered as the function or work of teaching: the art or science of teaching, education instructional methods" (DEEWR, 2009a, p.42). It includes the "instructional techniques and strategies that promote learning. It is an interactive process between teacher/practitioner and learner and is also applied to include the provision of some aspects of the learning environment including the concrete learning environment, and the actions of the family and community" (Siraj-Blatchford et al., 2002).

The foundation of environmental education pedagogy is a conception of teaching as a creative and dynamic process in which students and teachers collaborate to find solutions to environmental issues (UNESCO, 2015). Our beliefs are acquired through our readings, exposure to various stimuli and through the teaching/learning process. The teaching/learning process occurs mostly in our school and the best place for preparing a generation that believes in environmental principles is the school. In order to raise awareness of the environment among pupils at their very early stages of formative learning, environmental education has been incorporated into the school curriculum. The UNESCO and UNEP conference in 1977 developed a specific and common approach to environment education. The main tenets for the suggestions to deal with the environment are found in the Declaration and Recommendations of the Tbilisi Intergovernmental Conference on Environmental Education, which was held in 1977 and was co-organized by UNESCO and UNEP (Geetha & Suresh, 2015).

The terminology and idea of what makes up the natural environment includes a few key elements: complete ecological units that operate as natural systems without significant human intervention, including all vegetation, animals, microorganisms, rocks, atmosphere, and natural phenomena that occur within their boundaries. It also encompasses non-human-produced energy, radiation, electric charge, and magnetism as well as the universal natural resources and physical phenomena such as air, water, and climate that have no discernible borders (Geetha & Suresh, 2015). These terminologies and concepts have to form a pedagogical framework for developing the curriculum for environmental education in school converting the classroom into a hub for dynamic inculcation of environmental and life values.

Environmental education in the classroom has to be goal oriented, precise and based on the level of the class. It is based on learning theories and cognitive approaches that are consistent with other areas of educational psychology. Sequencing of instruction is based on learning theory. The sequence and layout

of learning activities has an impact on how information is received and maintained. Cognitive styles need to be considered while considering the environmental education programs as they are relevant at the development levels of the student. The ability to differentiate, attend to stimuli, remember the environmental cues and recognize environmental stimuli are all dependent on the processing capacities and are also age related.

CRITICAL PATH FOR ENVIRONMENTAL PROTECTION AND MENTAL HEALTH

A critical path for the development of a proactive attitude that protects the environment and at the same time enables the child to become mentally healthy and remain so would be the following:

Content of curriculum:

Develop a curriculum that:

- Teaches environmentally healthy beliefs based on age and level appropriate criteria using a holistic understanding of natural systems that include all forms of life and matter: vegetation, animals, micro-organisms, rocks, atmosphere, air, water, climate, energy, radiation, electric charge, magnetism and other natural phenomenon.
- Uses behavioral, developmental, and psychological behaviorism-based principles for teaching children to develop a proactive attitude towards the environment.
- Reinforces appropriate attitudes and behaviors towards the environment, whereas inappropriate attitudes and behaviors would not be reinforced. These can be done by use of principles of chaining, shaping, extinction, and conditioning.
- Promotes children's learning by designing a stimulating setting that gives them access to nature and links those experiences to educational objectives that are suitable for each child's individual and holistic development.
- Observes children to comprehend and analyse their growth and unique peculiarities, then adjusts the approach as necessary.
- Teaches Basic Behavior Repertoires (BBR) such that future learning would be based on already existing repertoires that are already functional, building on existing knowledge and attitudes.
- Puts in place pedagogical practices based specifically for each grade/student level.

Teacher’s Framework of Teaching - He/She Works on the Principle That

- Beliefs result in behavior: as the child grows in tune with nature the child learns protective factors that buffer the child, as he/she develops, in situations of distress as nature can be a great healer.
- Behavior that is environmentally proactive becomes ingrained in the child, enables the child to take decisions that are ‘nature friendly’ resulting in the creation of a culture of environmental friendliness as stated above, ‘beliefs are most likely to be learned from the prevailing culture.’
- Beliefs and learned behavior become a composite that get transferred from one generation to another and will finally result in a global culture that is environmentally friendly, socially healthy, promoting both mental and physical health.

European Economic Letters
ISSN 2323-5233
Vol 13, Issue 4 (2023)
http://eelet.org.uk

Developing the Pedagogical framework with Exposure based on beliefs influencing behavior

Developing beliefs and behavior

Theoretical basis: Beliefs direct behavior, the mind is everything. What we think, we become. "Beliefs become thoughts, thoughts turn into words, words turn into deeds, deeds turn into habits, habits turn into values, and values turn into your destiny".

Practical aspects: Use age-appropriate language, activities (including exposure to nature) for the child to understand concepts about the environment (including concepts about protection and destruction of nature and its effects), enable thinking activity (by using age-appropriate activities that promote thinking), enable the child to verbalize activities. Use activity schedules to promote environment friendly habits. Reinforce beliefs and behavior through readings, exposure to various stimuli. Enable memory concretization by using repetitive concrete activity based on age-appropriate activities.

Collaboration

Theoretical basis: Behavior should be positively nurtured through collaborative effort consisting of content and pedagogy in which students are involved in a collaborative mode, to encourage behavior change and action.

Practical aspects: Collaboration needs to be between teacher-student and student-student. Behaviors like interacting with nature (including camping trips, nature movies, zoo, animal farm visits, organic farm visits), discussions should be encouraged. Scrap book activities, small vegetable gardens, creating forest environments in the school and studying the effect over a few months, years, keeping records of developments, effects and variations during seasonal changes can be introduced.

Mental health perspectives: Enable the student to identify the community effort in success/failure in activity and reaction/responses to the same. Teach positive approaches to failures and proper management of crisis situations in the projects they undertake (example: how to understand and deal with situations when the plant wilts, or the chicken dies, or the fish in the tank is found dead). Also, teach appropriate responses of joy and sharing of successes, as the result of joint and collaborative efforts, inculcating the feeling of community.

Use of theory in pedagogy

Behaviorist Theory

Theoretical basis: According to behaviorist philosophy, behavior may be learnt and unlearned.

Practical aspects: Help the student to identify and change existing behavior with alternate and appropriate behavior, unlearn nature destroying behaviors (plastic, vehicular fuel oil disposal on land etc). Discuss oil spills etc, through age-appropriate pictures of dead birds and oil over the surface of the ocean. Also, show tankers undertaking cleaning activity and explain the significance. Show age-appropriate effects of natural disasters (earthquakes, floods, etc), man-made disasters (Chernobyl, Bhopal gas tragedy, etc) and explain the natural and human loss of life etc. Additionally, educators avoid reinforcing incorrect behavior by rewarding appropriate behaviour only; rewards can range from a supportive word to concrete prizes like star charts.

Mental health aspects: Teach the child the reality of natural and manmade disasters/accidents and prepare a protocol for developing awareness and coping skills in such situations through reinforcement, chaining, shaping and extinction.

Developmental Theory

Theoretical basis: Developmental theory - The environment, genetics, and context all have a role in a child's development. " Physical, cognitive, emotional, and social" development are all intertwined as children explore and play with tangible items.

Practical aspects : Educators facilitate children's learning at each stage of development by putting the age appropriate beliefs about the environment into practice by creating a rich atmosphere with regular activities including play, production of songs, theatre, crafts and fine arts based activities that could be connected to learning objectives (about their role in the environment and its protection, also about how the interaction with nature helps the cognitive, emotional states). Based on developmental theory, educators watch kids to understand and interpret how they are growing and how they differ from one another. These experiences may be connected to learning objectives that are suitable for each child's individual and holistic development.

Mental health aspects:

Psychological behaviorism

Theoretical aspects:

- sensory-motor repertoire, including basic sensory-motor abilities, as well as attentional and social skills;
- language-cognitive repertoire, including receptive language, expressive language, and receptive-expressive language;
- Emotional-motivational repertoire, including positive and negative patterns of emotional reaction directing the whole behavior of the person.

Practical aspects: Develop basic behavioral repertoires for interacting with nature. Teach appropriate responses so that behavior is such that the child is conditioned to interact with and protect nature and thereby also develop cognitive, emotional, and social strength and skills to deal with life situations. Reinforce these behaviors through repetitive experiences using contextual cues. Expose the children to nature and natural living by trips where the children live in nature friendly environments. An example would be the lives of Hari and Asha from Kannur (Hari and Asha, 2020)

Mental health aspects: Generalize the positive, proactive, reinforced behaviors to other life situations though age-appropriate exposure to disasters, tragedies, farming successes (both in school and other programs outside of the school). Create discussion groups where personal experiences could be shared and group interactions that are therapeutic can emerge.

Conclusion

"It is my dream that all children grow up like magnificent trees. Tall and strong. Kind and unique. Helping others to grow." (Gathright, 2009)

The first academic publications on "purpose specific" tree climbing were published by Gathright, a professor at Chubu University (Aichi, Japan). John-san, an enthusiastic ecologist/naturalist and tree

climber, founded the first tree climbing school in Japan. Called "Tree Climbing Japan," it is committed to bringing people of all ages and physical abilities into the forests to climb trees and appreciate nature. Over 150,000 people have climbed trees with the assistance of "Tree Climbing Japan," which has also educated over 1,200 instructors and works to improve forests and empower people all over the world.

Humanity has to reawaken this spirit and rekindle the fire of life that resides in nature, in us…We need to humble ourselves as in the words of Dostoyevsky (2015), man, do not take delight in your superiority to animals since, despite your magnificence, you pollute the environment wherever you go and leave an ignoble path in your wake. Sadly, this is true of practically all of us.

Thoreau used to take his students to the rivers and meadows to observe the animal and plant world. He emphasized human activity as the key to learning and had a vision of more interactive education. (Zimmerman, 2017)

Teaching a generation to respect nature and life is a process needing expertise, consistency, wide knowledge base (content), proficiency and skills in use of teaching methodology and principles (pedagogy), collaboration between various agencies, practical exposure and application(exposure) of learned behavior and practices, by the teacher to make nature and life part of the student's immediate and internal repertoire. This paper tries to give a framework for developing such teaching methodology.

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