

Environmental Adult Education and Environmental Stewardship in Nigeria

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Abstract. This paper seeks to expose the adult population to the concept of stewardship which utilise diverse actions as creating protected areas, replanting trees, limiting harvests, reducing harmful activities or pollution, creating community gardens, restoring degraded areas or purchasing more sustainable products through the environmental adult education to ensure a proper and effective handling of the environment bearing in mind the essence of God's provision of the natural resources. The paper examines the part EAE has to play to bring about environmental stewardship in Nigeria such as educating the adult population to be mindful of their dealing with the environment such as sustaining clean and healthy air, protecting and restoring the ecosystems functions, goods and services, generating clean energy and using it effectively, supporting ecological sensitive land management and development among others. It also proffers suggestions that could help us carryout steward behaviour in the society by limiting the way we dispose water bottle after drinking water from the bottle; using a particular item over and over again until it actually becomes a waste; buy or grow our own local food on healthy soil; produce less waste, reduce emitting greenhouse gas to avoid climate change by walking briskly to a short distance among others.

Key words: *Steward, Stewardship, Environmental Stewardship.*

Introduction

God created the Garden of Eden, filled it with everything to keep man comfortable and put man there to dress it, maintain it for the good of him and the environment (Gen. 2:15). This means that he can eat, cultivate the soil and have enough to feed himself and his family in the Garden of Eden on earth. In His love and care for mankind, He asked human to take care of the whole surroundings and this involved taking care of the environment and other creations, families and community. Being a good steward in this world is one way to do the right things; but when greed creeps in the language will change. Greed and lack of contentment could be traced to the reason why it is difficult for stewardship to be sincerely mentioned among the adult population. This could also be traced to the very reason why humans are not ever satisfied with their needs. Environmental stewardship is linked with the ability of man to create actions capable of protecting the environment from any form of harm, replanting trees to avoid deforestation, minding their methods of harvest just as the Bibles in Leviticus 23:22 cautions agriculturist not to stripe their farms naked for one reason of the poor and also to keep the fertility of the soil. It is very important that environmental stewardship be exposed to the adult population through environmental adult education because it would be difficult to expect the

achievement of environmental stewardship from the adult who has not been exposed to what environmental stewardship is. This buttress the fact in Babe Dioum's statement cited in Eze, (2021) and I quote "...we will conserve only what we love; we will love only what we understand and we will understand only what we are taught".

It is therefore, very important that EAE is put to task to use its different approaches to create awareness about what environmental stewardship is. This is the reason one would attest to the fact that the cry for environmental education can never be overemphasised and should be given a place or a fair hearing at the primary and secondary levels of education while environmental adult education is allowed free-hand in the higher institutions. Considering the environmental situations in Nigeria and all over the world where even adult citizens claim to be ignorant of the environmental situations. Creating environmental awareness is a task that must be done from door to door so that what one knows about the environment will be passed on to the next-door neighbours. By this it will become easy for everyone to be educated to become environmental literate, having the knowledge about environmental issues and challenges. By this awareness creation, everyone will come to the understanding that as we share the environment in common with one another, we are liable to share the destruction with one another. Therefore, to curb the menace, it is therefore necessary that environmental adult education be made everybody's business in order to acquire the knowledge to fight against environmental challenges of any kind. By the reason of the awareness, the adults will improve to become catalysts, fighting for the environment. We must know that for us to become environmental stewards, we must acquire the knowledge of the environment hence the call for environment adult education to handle the environment whether through ecology, natural, technology, sociology, aesthetic and build environment in a way that it gives us opportunity to make it conducive, knowing that comfort cannot come from anyone else except from us as individual. It is therefore demanded that we show and offer faithful stewardship to our environment so that we can consciously and conveniently live and enjoy the benefits of our stewardship to the environment even for the betterment of the future generations yet unborn.

Conceptual Reviews

Environment

Kimaryo (2011) after looking at three ways people perceive the environment in Tani's study, (2006) sees the environment as "the totality of the things that surrounds man which can be categorised into biophysical, social, economic and political". The biophysical dimension she says involves living and non-living things and the natural systems of the environment; the sustaining base of life support system and also the base for the economic, social and political dimensions. The social dimension refers to people living together as part of the environment. The economic dimension is the system within which there are different production sectors, and jobs exist to enable individuals to get money to pay for the resources and services which they need. The political dimension refers to the condition that enables the individual to continue to and influence the policies and decisions that shape access to resources, the economy and how people live together (O' Donoghue & Russo, 2004 cited in Kimaryo, 2011).

Oduro-Mensah (1992) defined environment as "such that consists of all the external factors and forces with which one interacts from conception until death. He asserts that environment includes physical, chemical, biological, psychological and socio-cultural dimensions and indeed everything that makes up the context in which the individual lives". Douglass and Holland, in Shrivastava, (2006) also defined environment as "all the external forces, influences and conditions, which affect the life, nature, behaviour and growth, development and maturity of living organisms". According to Konya, (2015) environment scientifically is defined as all the biotic and abiotic factors that act on an organism, population or ecological community and influence its survival and development.

Biotic factors include the organisms themselves, their food, and their interactions.

Abiotic factors include such as sunlight, soil, (land), air, water, climate and pollution.

The word environment is derived from the French word “Environ” meaning encircle. Environment is a very broad concept and it involves everything that affects an organism during its lifetime. It can simply be defined as one's surroundings. It includes everything around the organism such as:

Abiotic (non-living thing) and

Biotic (living thing) environment.

Abiotic environment is made up of soil, water, and air while the biotic environment includes all other organisms with which the organisms come into regular contact. Environment can be defined in various ways some of which are:

I. It is in totality of all social, biological and physical or chemical individually as well as collectively that compose the nature and man-made surroundings.

II. It could be said to be the sum total of conditions which surrounds man at a given point in space and time.

III. It is the representative of physical components of the earth where man is the important factor influencing his environment.

Environment could be generally defined as the physical surroundings and conditions affecting the lives of people and animals. The global environment is grouped into four parts such as:

1. Atmosphere

2. Hydrosphere

3. Lithosphere

4. Biosphere

1) **Atmosphere:** This is the protective blanket of gases surrounding the earth and saves of from the hostile environment of outer space. It absorbs most of the cosmic rays from outer space and a major portion of the electromagnetic radiation from the sun. It transmits only near ultraviolet visible, near infrared radiation and radio waves while filtering out tissue-damaging ultraviolet radiation. The atmosphere plays a key role in maintaining the heat balance of the earth through absorption of infrared radiation emitted by the sun and re-emitted from the earth. The major components of the atmosphere are nitrogen and oxygen, while the minor components are argon, carbon dioxide and some trace gases. The atmosphere is the source of oxygen (essential for life on earth) and carbon dioxide (essential for plants photosynthesis). It also supplies nitrogen which nitrogen-fixing bacteria and ammonia manufacturing plants utilise to yield chemical bound nitrogen essential for life. It is a vital carrier of water from ocean to land, as part of the hydrological cycle. Atmosphere is divided into four layers such as:

Troposphere; Stratosphere; Mesosphere; Thermosphere

2) **Hydrosphere:** This includes all types of water resources such as oceans, seas, rivers, lakes, streams, reservoirs, glaciers, polar icecaps and ground water. About 90% of the earth's water supply is in the oceans where the high salt content does not permit its use for human consumption. About 2% of the water resource is locked in the polar ice cap and glacier while only 1% is available as freshwater (surface water, river, lakes, streams and groundwater) for human consumption and other uses. Water can be seen through the following sources:

Pure water; Rainwater; Ocean water; Surface water; Ground water

3) **Lithosphere:** This is the water mantle of the solid earth consisting of minerals occurring in the earth's crust and the soil of the earth crust comprises of a complex mixture of minerals, organic matter, air and water, the soil is the most important part of the lithosphere.

4) **Biosphere:** This is seen as surface envelope of the earth which is naturally capable of supporting life. It could be seen as the sum total of all living creatures on earth.

Concept of Environmental Adult Education

EAE in laymen's terms refers to effort in teaching environmental issues and how individuals and businesses can change their lifestyles and manage the ecosystem to live sustainably (Wikipedia, 2012). It is the education ABOUT, IN and FOR the environment, Kimaryo (2011); an educational approach that moves the individuals to develop an attitude of concern, values and behaviour capable of protecting the environment in all areas of his dealings avoiding degradation and any form of devastation. It is a synthesis of environmental education and adult education. It is an applied environmental education within the context of adult education.

According to Summer (2003), Environmental Adult Education is recognised as a “hybrid outgrowth of the environmental movement and adult education, combining an ecological orientation with a learning paradigm to provide a vigorous educational approach to environmental concerns.” In laymen's terms, EAE is referred to as efforts in teaching environmental issues and how individuals and businesses can manage or change their lifestyles and ecosystems to live sustainably. Eheazu (2009) defined Environmental Adult Education as a process of developing in adults, certain attitudes, skills and knowledge that could enable them to successfully interact and live in harmony with the external forces and elements that surround them as they engage in their daily activities for survival. In the same vein, Apel and Camozzi (1996) agreed that effective environmental education involves content in the following areas: Awareness, Knowledge, Attitudes, Skills, Participation.

This content is in line with the goal of environmental education as declared in the Tbilisi Conference UNESCO, (1977). The declaration also identified five objectives of environmental education from the goals of which the objectives of environmental adult education was coined. These include awareness, knowledge, attitudes, skills and participation and action.

Awareness: By awareness, it means to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems.

Knowledge: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of the environment and its allied problems.

Attitude: to help social groups and individuals acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection.

Skills: to help social groups and individuals acquire the skills for identifying and solving environment problems.

Participation and Action: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards the resolution of environmental problems.

Steward

The steward could be seen as a person who manages another's property or financial affairs; one who administers anything as an agent of another or others, a person who has charge of the household of another, buying or obtaining food, directing the servants and so on. A good steward is expected to display the following qualities: Compassionate, content, generous, grateful, loving, loyal, obedient and prayerful.

Stewardship is all about keeping and taking good care of what is kept in your care and involves actions and activities like: behaviours, decisions, and technologies carried out by steward-individuals, groups, or network of actors (Bennett, et al., 2018. Hajkowicz & Collins, (2019) consider stewardship measure as quantifiable benefits to the environment that are a result of a stewardship action or project and consider the following as types of stewardships:

Stewardship Actions

This involves the activities, behaviours, decisions, and technologies carried out by steward-individuals, groups, or network of actors (Bennett, et al., 2018).

Categories of Stewardship

There are five categories of stewardship such as:

Restoration and Protection

The following actions lead to improved biodiversity or ecosystem health:

- Clean up litter at local beaches, parks, or school grounds
- Assist local estuaries, parks, or other natural areas with planting or restoring protective vegetation or trees
- Restore a local habitat
- Remove invasive plants
- Develop a school garden, natural history area community garden or other sustainable green space and measure the change it makes.
- Install rain gardens to help manage storm water.

Everyday Choices

The following actions lead to the reduction of carbon footprint or use of natural resources:

- Start or expand a recycling programme at home or school and measure the effect of the change.
- Monitor and save water in the face of potential drought or reduction in available water.
- Up cycle discarded materials.
- Compost food or yard waste.
- Reduce waste in a cafeteria and measure the impacts to the school or local community.
- Research and implement energy efficient strategies or energy alternatives at school and/ or at home.
- Offer personal ways for students to live more sustainably.

Community Awareness

The following are actions that lead to increased awareness by community members:

- Giving presentations to local organisations.
- Sharing information on social media
- Organising community events
- Recording and broadcasting public service announcements
- Posting flyers in the community
- Posters at community events, fairs, festivals
- Conservation awareness activities help individuals believe that the environment is valuable and under threat and should be protected from human impacts.

Civic Action

The following are actions that lead to environmental policy or rule for an organisation or community:

- Speaking or presenting at town meetings
- Voting for legislation or candidates
- Writing to elected officials or decision makers
- Meeting with elected official

Environmental Stewardship

This is referred to as such diverse actions as creating protected areas, replanting trees, limiting harvests, reducing harmful activities or pollution, creating community gardens, restoring degraded areas or purchasing more sustainable products (Bennett, Whitty, Finkbeiner, Pittman, Bassett, Gelcich & Allison (2018). This is meant to focus on environmental conservation actions, active restoration activities and or the sustainable use and management of resources. Stewardship actions can be taken from local to global scale and in rural and urban context. It is the responsibility for environmental quality shared by all those whose actions affect the environment (EPA). This is the responsible use and protection of the natural environment through conservation and sustainable practices to enhance ecosystem resilience and human well-being (Chapin et al, 2010). Environmental stewardship refers to the responsible use and protection of the natural environment through active participation in conservation efforts and sustainable practices by individuals, small groups, non-profit organisations federal agencies and other collective networks (wikipeadia, 9/9/2023). Furthermore, environmental stewardship could also be referred to as the responsible use and protection of the natural environment through conservation and sustainable practices to enhance ecosystem resilience and human well-being (Chapin et al, 2010), 13Oct., 2022. Environmental stewardship is said to be the responsible use and protection of the natural environment through conservation and sustainable practices to enhance ecosystem resilience and human well-being (Chaplin et al, 2010; 2022).

Stewardship of Natural Resources

Stewardship could be said to be the conducting, supervising, or managing of something, especially the careful and responsible management of somethings entrusted to one's care, especially the stewardship of natural resources which was entrusted to man through the man Adam that started the human race. The stewardship of natural resources is the essence of this paper. Stewardship is about control, protection, supervision, trust, administration and change. It's example could be found in a case of using materials that safely biodegrade, reducing waste through recycling and considering the environmental effect in developing inventions and infrastructure (2020). Stewardship could be best described as the position and duties of a steward, a person who acts as the surrogate of another or others, especially by managing property, financial affairs, an estate and so on.

Environmental stewardship could include the following and many more:

- Recycling
- Replacing insufficient appliances
- Making efficient transport choices
- Creating protected areas,
- Replanting trees,
- Limiting harvests,
- Reducing harmful activities or pollution,
- Creating community gardens,
- Restoring degraded areas
- Or purchasing more sustainable products.
- In forestry, it means harvesting trees at appropriate times so they are not wasted by dying , or being destroyed by fires
- It also means replanting trees
- In waterways, water flow must be managed to avoid wasting farmlands and personal properties through flood
- In farming, soil nutrients must be replenished
- Weeds, insects and fungi must be controlled without polluting the creeks, lakes and rivers etc

- Reducing the number of bags you use for shopping. Use reusable bags
- Reducing water usage and waste by closing taps and lower the flow to the smallest needed to do the job in reasonable time
- Reducing the amount of fuel, you use by choosing smaller, light vehicles. Live close to where you work, use public transit if you can. (NOAA, **Error! Hyperlink reference not valid.**)
- Stewardship is all about keeping and taking good care of what is kept in your care
- Other examples of environmental stewardship include recycling, replacing insufficient appliances, and making efficient transport choices.

Types of Environmental Stewardship

Air: Sustaining clean healthy air

Ecosystem: Protecting and restoring ecosystem functions, goods and services

Energy: Generating clean energy and using it efficiently

Land: Supporting ecological sensitive land management and development

Stewardship Programmes

Stewardship programmes require that the manufacturers of certain consumer products take financial responsibility for the end-of-life management of those products. End of life management refers to the collection and recycling of the materials from consumers and commercial generators. Stewardship programmes could be made successful following these key factors:

Based on Sound Environmental Standard

- Recycling standards need to be set and enforced by the government
- A clear definition of recycling (the recovery of materials as industrial feedstock in the production of new products)
- Minimum recycling rates need to be established. Energy from waste bag, house dust, and slag are not recycling (RMC recycling rate 84% for alkaline batteries). recovered materials should be used for their intended purpose or upcycled into new products.

Producer Funded Open Market-Based Incentive Approach

- Here, there is need to be open access to all companies that are willing to compete under a regulated environmental standard. This is capable of creating jobs, competition and result in increased collections.

Incentivised collection: Incentives are needed to drive collections and to create jobs.

Funds for collectors and transporters: Due to incentivised collection programme for example in Ontario, the battery collection programme has grown to include collections from outside multi-residential buildings, retail outlets, schools, hospitals, municipality, ICI sector, government facilities and collections from NGOs. Collection rates over 90% have been achieved for lead-acid batteries due to their market value. When proper incentives are made available, smaller results are achieved for other battery types.

High collection targets: High collection targets should be established and enforced by government. High collection targets combined with high environmental standards stimulates competition and investment in addition to the obvious environmental benefits.

Performance based programmes: Compensation needs to be based on the success of collections including incentives for higher recycling rates and more environmentally responsible processing methods. Rather than based on product sold into the market place as this economically rewards companies for not collecting and recycling

Some Barriers to a Successful Stewardship Programmes

- Voluntary instead of incentive based
- Primarily cost driven instead of environmentally sound management of material
- It does not call for continuous improvement, instead focus on collection with weak targets and no focus on environmental outcomes or recycling efficiencies.
- Lack of competition-programme participation is limited to one IFD and collector.
- Closed market and fixed pricing keep out innovation, job creation and competition.

Environmental Adult Education and Environmental Steward

EAE concerning efforts in teaching environmental issues and how individuals and businesses can manage or change their lifestyles and ecosystems to live sustainably. It becomes expedient that the adult be taken through such efforts that is capable of guiding them through the behaviours, abilities and attitudes of playing the part of stewardship in the management, protection and conserving the environment as follows:

Ditch the bottled water: it is very important for humans to identify the danger bottled water itself is causing the society today. Yes, it is true that when we drink water from bottle it could help us go along with water and continue to sip the water to keep us hydrated but the danger is our inability to recycle the bottles. This could be possible if after drinking once from the bottles, we use that same bottle to refill water from our well-treated taps for subsequent drinks. In this case, we can fight to take care of the environment by limiting the number of bottles littering around our neighbourhood.

- **Recycle, recycle, recycle:** this has to do with the ability use a particular item over and over and over again until it cannot be used anymore; and even at that it could be transformed into another item such as using trash papers for tissue papers or something else like glass for jwelleries, to refurbish old electronics. Ways of recycling gadgets or electronic machines could be to return it to the local retailers with either for exchange with little discount, recycle companies, sell them at a reduced price or donate at charity homes and goodwill centres. These ways make it safer than dropping it in a land fill where they become nuisance; except in cases like Nigeria where scavengers root them out for their profit making. There is need for man to identify recyclable materials for easy maintenance of the environment. It is also important that humans learn to adopt the method of purchasing products that use less packaging or utilise recyclable materials in their packaging. Hard copies of academic materials like project work presented could be packaged for recycling purpose instead of burning them to cause air pollution and other hazardous effects in the atmosphere. It is important to identify what can and those that cannot be recycled and learn to segregate waste for easy management.
- **Buy local food (or grow your own):** food that comes from some far away distance could be polluted by some percentage of carbon emission, so locally produced foods got from the backyard and such safety environment make for safe consumption. That is why it is encouraged that we buy local food or encouraged to grow our own, no matter the quantity.
- **Bring your own plastic alternatives:** In the past, mothers went to the market with their cane-worked baskets and then less plastics and cellophane bags were used and the environment did not suffer too much waste collection, transportation and method of disposal. To be environmentally steward, it becomes expedient for everyone to make alternatives for plastics. For instance, if one would have one single use of plastic to enable him/her pick up the groceries at every instance, it will do man and the environment some good.
- **Start a zero-waste challenge:** to this effect, it means we must as matter of seriousness avoid work with hard copy but make use of electronic correspondents or as producers, produce items that will create less waste from the factories or companies. Today because of hardships goods that were produced in large packs are rather produced in smaller packs to enable buyers to afford. This should be discouraged so that people would rather go for the larger packs that last longer and curb the effect of waste generation.

- **Change your mode of transportation:** too many vehicles emit great quantity of greenhouse gas emission which cause greenhouse effect the causative factor of climate change; therefore, as environmental stewards, it is important to note that a brisk walk to short distance to pick up our groceries would help us and the environment.
- **Start composting:** composting is said to be one of the environmentally friendly methods of grooming our garden and taking proper care of the soil for fertility production; so for man to prove his stewardship on the environment, he should start composition with waste materials that are compostable instead of littering the environment to create foul smell and deface the environment. This replaces the danger of chemical fertilizers as these could be produced with kitchen waste like fruit or vegetable peels, green or brown leaves and food remnants as the case may be (texas disposal system- texasdisposal.com/essential...)

Conclusion

Environmental adult education being a process of developing in adults certain attitudes, skills and knowledge that could enable them to successfully interact and live in harmony with the external forces and elements that surround them as they engage in their daily activities for survival is such tool that is capable of engaging the adult in the activities of stewardship which is about control, protection, supervision, trust, administration and change to a responsible use and protection of the natural environment through conservation and sustainable practices in order to enhance ecosystem resilience and human well-being. The application of the knowledge of EAE as a tool to educate the adult population to live friendly with the environment and display the sense of stewardship in their relationship with the environment for sustainable posterity stands a very great place in ensuring that the adult population deviate from the habit of degrading the environment, living unfriendly with the environment in every sphere of their endeavour to becoming literate about the environment to the level of proving the their stewardship to everything in the environment even their natural resources.

Suggestions

This paper has in its quest and concern for the environment and mankind suggested that for the adult population (even in their acclaimed ignorance in their attack to the environment) to prove his concern for environmental sustainability, should reverse to recycling, Reducing the number of bags you use for shopping. Use reusable bags. Reducing water usage and waste by closing taps and lower the flow to the smallest needed to do the job in reasonable time. Reducing the quantity of fuel used for transportation by choosing smaller, light vehicles. Live close to where you work and use public transit if you can. Learn to refill the same bottle with water instead of continuous buying of bottled water to litter the neighbourhood with empty bottles. Learn to grow or buy our own local food instead of patronising some polluted or carbonised food. And many more as listed above.

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