

Adinkra Cultural Symbols for Environmental Sustainability Education in Ghana

Dickson Adom^{1,*}, Moses Opoku², Jerry Pratt Newton³, Akwasi Yeboah⁴

¹Department of Educational Innovations in Science and Technology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

²Department of Fine Arts and Design, University of Port Harcourt, Port Harcourt, Nigeria

³Department of Education, Institute of Distance Learning, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

⁴Berekum College of Education, Berekum, Brong Ahafo Region, Ghana

Abstract The Adinkra symbols are one of the ancient philosophical marvels of creation by the indigenous Ghanaians. Aside from their excellent design concepts, they are also latent with unparalleled philosophical thoughts. The main thrust of the paper was to investigate into the possibility of using the philosophical ideologies enshrined in the Adinkra symbols for educating the Ghanaian people about environmental sustainability. The study was rooted in the qualitative research approach with descriptive method guiding every facet of the research. Interviews and observations were the main data instrumentations for the study. A total of forty eight respondents consisting of five lecturers, ten students, sixteen elderly residents, nine traditional authorities as well as eight environmentalists who were purposively sampled were involved in the study. The study unearths the philosophical meanings of some of the Adinkra symbols in resonance with the preservation and sustainable use of the environment and its resources. The study concludes that the Adinkra cultural symbols of Ghanaians have rich philosophies that can be tailored to promote and sensitize the general public on the relevance of environmental sustainability. It recommends that the government, ministries and agencies responsible for environmental sustainability awareness programs and campaigns must utilize the Adinkra symbols to enhance environmental sustainability education in Ghana.

Keywords Adinkra Symbols, Culture, Environmental Sustainability Education, Philosophy, Environmental Protection

1. Introduction

Environmental sustainability education stresses on assisting and engaging individuals and groups to understand the natural systems and environmental issues (Iyer-Raniga & Andamon, 2013). It is aimed at motivating persons of all ages in living sustainable lifestyles, especially towards the environment and its resources (Sund & Lysgaard, 2013). The ultimate goal is to effect positive change in the attitudes of individuals towards caring for the environment and its resources (Ardoin & Ryan, 2011). However, the education on environmental sustainability extends beyond transforming attitudes to the change in the mental dispositions where decisions on the actions toward the environment issue from (Sustainable Development Education Panel, 1999). The path of environmental sustainability education dwells more on the humanistic concept that focuses on the views and cultures of people

(Mandikonza & Latz-Sisitka, 2016) with less emphasis on finding solutions to environmental problems in science and technology (UNESCO, 1997). The humanistic concept involves educating people to live in harmony with nature while cultivating good traits such as respect, selflessness, social justice and tolerance (UNESCO, 2015). This form of education that looks into the perceptions of people is rooted in the cultural traditions of people. The informal instruments such as proverbs (Adom, 2016), myths, folklores, taboos used for instructing societal members to cultivate moral attitudes that propels them to live sustainable with nature and its resources (Asante, Adom & Arthur, 2017; Pretty, Adams, Berkes, Ferriera, Dudley, Hunn, Maffi, Milton, Rapport, Robbins, Sterling, Stotlin, Tsing, Vintinner & Pilgrim, 2009).

Mapira and Mazambara (2013) as cited in Adom, Kquofi and Asante (2016) indicated that these cultural instruments for environmental sustainability in Africa were efficient means of curbing unwarranted behavioural attitudes toward the environment and its natural resources. The teaching aids for such environmental sustainability education were the cultural symbols understood by members of the Ghanaian society. Paramount among these cultural symbols are the Adinkra symbols. The Adinkra symbols are special symbols with symbolic and philosophical meanings stamped in

* Corresponding author:

adomdick2@gmail.com (Dickson Adom)

Published online at <http://journal.sapub.org/env>

Copyright © 2018 The Author(s). Published by Scientific & Academic Publishing

This work is licensed under the Creative Commons Attribution International

License (CC BY). <http://creativecommons.org/licenses/by/4.0/>

mourning cloths to bid farewell to the dead (Adom, 2009; Adom, 2014). The adinkra symbols are laden with philosophical ideals that offer deep understanding into the values, norms and beliefs of the Ghanaian people (Adom, 2016). They offer insightful information for meditation on the need to demonstrate good behavioural attitudes. Many of the Adinkra cultural symbols are keen for environmental sustainability education because as an important feature of this form of education, it must be locally relevant and culturally appropriate for the people (Sustainable Development Education Panel, 1999). Ghanaians take great pride in the Adinkra symbols. The symbols have been used singlehandedly in many scenarios to represent the splendid Ghanaian cultural heritage (Adom, Asante & Kquofi, 2016). However, there is no study that has sought to find the links between the Adinkra symbols and environmental sustainability education. Therefore, the main tenet of the study was to investigate into the Adinkra cultural symbols to find out their philosophical insights that can be used for environmental sustainability education in Ghana. The study was hinged on these two research questions:

1. Which of the Adinkra cultural symbols have philosophical insights for environmental protection and could be used for environmental sustainability education?
2. How can the identified Adinkra cultural symbols be used as an instructional tool for environmental sustainability education?

The research is relevant because it supports the culture theory by Milton (1996) that the culture of a people holds insightful benefits that can improve the state of societies. The environmental sustainability education also aims at changing the mindset of individuals and their conduct and perceptions of the environment (Sund & Lysgaard, 2013). This is seen as being a powerful weapon in positively regulating the attitudes of people toward the sustainable use of the environment and its resources. Ghana as a country has now adopted the human ecology approach (Ghana NBSAP, 2016) to natural resource and environmental protection. Therefore, the study has cleverly adopted the adinkra cultural symbols that are well embraced by the Ghanaian people as part of their cherished cultural heritage, and imbued it with philosophical imports that can be used for environmental sustainability education.

2. Methodology

The qualitative research design was utilized for the study due to its social-cultural nature (Denzin & Lincoln, 1994). Another key reason why the researchers utilized the qualitative design was also because they wanted to find out how the respondents understood the philosophical imports of the Adinkra symbols in relation to environmental sustainability education (Creswell, 2009). The researchers wanted to creatively explore how the Adinkra cultural

symbols could be used for carrying out environmental sustainability education through observation and description, hence the use of the descriptive research method (Koh & Owen, 2008). This was overarchingly aimed at discovering new knowledge (The Association of Educational Communications and Technology, 2001) about the Adinkra symbols and the roles they can play in environmental sustainability education.

The rich data for the study was gathered via two main anthropological data collecting instruments, interviews and observation. Personal interviews and Focus Group Discussions were carried out by the researchers in ascertaining the philosophical understanding of respondents on how the well-known Adinkra symbols could be used in heightening environmental sustainability education through an interactive communication (Moriarty, 2011) between the researchers and the respondents. The interviews were highly in a semi-structured form. This form of interview with its distinctive flexibility (Kumekpor, 2002) allowed the researchers the freedom to ask the main questions with other auxiliary questions to solicit for the hidden and detailed views of respondents on the Adinkra symbols. Also, the researchers keenly observed how the Adinkra cultural symbols were used in the three local communities whose traditional authorities were involved in the study. The observations assisted the researchers in offering a 'written photograph' (Erlandson, Harris, Skipper & Allen, 1993) of the relevance of the Adinkra symbols for instructing members in the Ghanaian local communities on positive moral behaviours.

The forty eight respondents involved in the study (Table 1) were purposively selected because they possessed distinctive features that greatly assisted in realizing the objectives of the study (Fraenkel, Wallen & Hyun, 2012). Nine traditional authorities and sixteen elderly residents who were seen as well versed in the cultural traditions and symbolic meanings associated with the Adinkra cultural symbols in three local communities in Ghana, namely, Buoyem, Anyinam-Kokofu and Kumawu were engaged in the study. Eight environmentalists working in the Environmental Protection Agency and the Resource Management Support Centre of the Forestry Commission were also purposely selected for the study. This was due to the personal beliefs they held that the Adinkra cultural symbols were of great value in environmental sustainability education. Also, five lecturers and ten students in Art and Culture in the Kwame Nkrumah University of Science and Technology and the University of Education, Winneba of Ghana were deliberately selected for the study. They were selected by the researchers based on prior background information that their research interests were directly linked to the use of cultural symbols for societal development.

The data accrued from the study were analyzed using the qualitative data analysis. This is a bi-fold analytical process of initially organizing the data generated from the study (Best & Khan, 2006). After that, the researcher describes

them rigorously in such a manner that the results of the data analysis could be understood clearly and the interpretations given would not be disputed (Wakkary, 2008). The researcher thoroughly classified the field notes from the interviews and observations (Scott & Usher, 2011). The relationships between the classifications were examined and the generalizations from the data were then elaborated in the final written report (Creswell, 2009).

The study was pivoted in the interpretive philosophical paradigm which asserts that meanings and knowledge are best known from the interpretations given by those who have experienced the phenomena (Cransford, 2016). Thus, the philosophical interpretations of the Ghanaian cultural symbols for environmental sustainability education were sought from those who are familiar with them and appreciate their worth in national development.

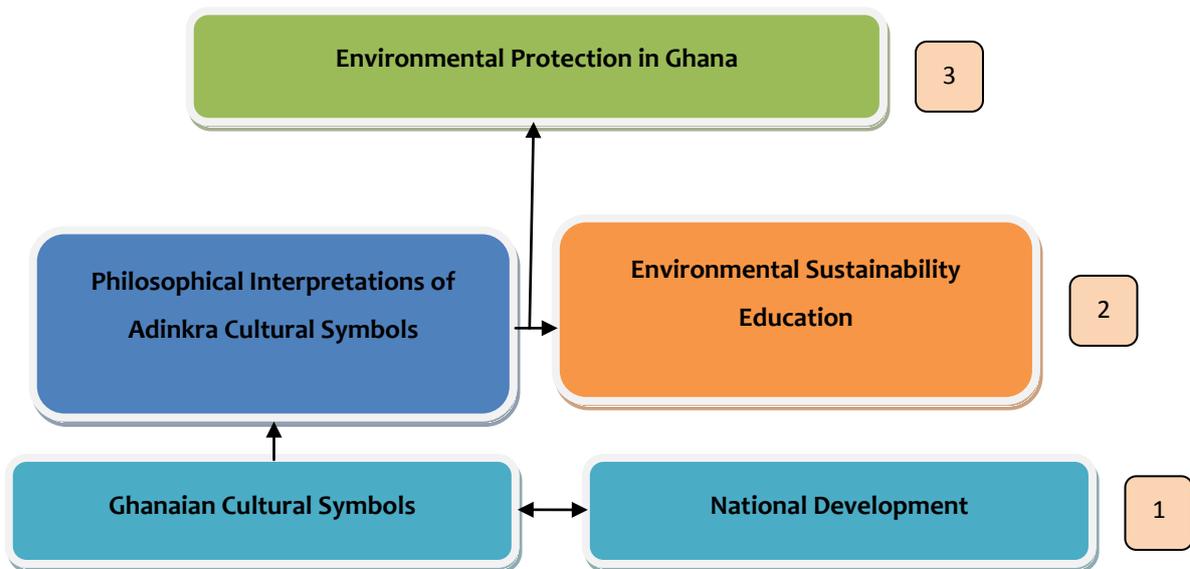
The culture theory underpins this research. This theory postulates that an understanding of culture can enlighten us on the way environmental issues are perceived and understood, both by local communities and within the contemporary world (Milton, 1996). It discusses how the study of culture and all culture-related instruments such as cultural symbols can help environmentalists to have a better understanding of human ecology and a more informed discourse on the search for sustainable ways of living.

The conceptual framework for the study (Figure 1) clearly illustrates the assertions of the researchers regarding how the Ghanaian cultural symbols could contribute to national development. It asserts that the Adinkra cultural symbols have philosophical interpretations that can be used for environmental sustainability education in Ghana. This would maximize the efforts put in for bolstering environmental protection in Ghana.

Table 1. Breakdown of interviewees

Respondents	Number Purposively Sampled	Justification for their selection
Traditional Authorities	9	They possessed enough philosophical interpretations on the Adinkra cultural symbols.
Lecturers in Art and Culture	5	Their research interests are in the philosophical interpretations of cultural symbols.
Higher Education Students in Art and Culture	10	They possessed theoretical insights on the philosophies in the Adinkra cultural symbols.
Environmentalists	8	They carry out environmental sensitization education in Ghana. They were optimistic of the benefits of using Adinkra cultural symbols for environmental sustainability education.
Elderly residents in the selected local communities	16	They had insightful oral philosophies about the Adinkra cultural symbols and how they aided in environmental protection.
TOTAL	48	

Researchers' construct from the field survey, 2018



Source: Researchers' Construct

Figure 1. The Conceptual Framework for the Study

3. Results and Discussions

The findings from the study are presented and discussed under the two main headings, namely: the identification and description of Adinkra cultural symbols with philosophical insights for environmental sustainability education, and the suggested ways that the identified and described Adinkra cultural symbols can be used as instructional materials for environmental sustainability education.

3.1. Adinkra Cultural Symbols with Philosophical Insights for Environmental Sustainability Education

Through the interviews and observations, the researchers gathered various Adinkra symbols that were opined by the respondents as having philosophical insights that could be used for environmental sustainability education in Ghana. A total of fifteen (15) Adinkra cultural symbols were identified as having philosophical insights on environmental protection and could be used for environmental sustainability education. They included *the Sankofa, Nkyimkyim, Gye Nyame, Bese Saka, Pempamsie, Ohene Tuo, Obi Nka bi, Aya, Duafe, Nkonsonkonson, Akoben, Fihankra, Sunsum* and others. It was noticed among the traditional authorities and the residents in the selected local communities that they knew more of the original symbolic interpretations of the Adinkra cultural symbols. However, when they were helped to reason in relation to how the Adinkra cultural symbols could be used for environmental sustainability education, they offered very interesting remarks. For instance, all the traditional authorities interviewed separately in private interviews, surprisingly mentioned the *Sankofa* Adinkra symbol as the most important of all the Adinkra symbols in relation to environmental sustainability education. They all shared common philosophical interpretations of the symbol. The comments made by the traditional chief of Buoyem resonated with the other traditional authorities that:

The *Sankofa* Adinkra cultural symbol is a reminder to society members to follow the sustainable lifestyles of their early forebears. They always thought of the future generations and censured the use of the environment and its resources. They were determined to please the spirits and deities whom they believed would bless them for living sustainable lifestyles. The symbol educates society members in modern local communities to walk the ethically appropriate paths of their ancestors, by caring for the environment and engaging in healthy environmental practices (TA-Buoyem, Personal Communication, 2/12/2017).

On the other hand, the lecturers and students knowledgeable in culture were forthright in explaining the philosophical values in the Adinkra cultural symbols. Many of them highlighted the Adinkra symbols that emphasized on having peaceful relations with one another, including all living and non-living things in the physical and spiritual environments as well as unity in fighting towards the goal of environmental sustainability. The notable Adinkra cultural

symbols mentioned by a larger section of them were the *Obi-nka-bi* and *Nkonsonkonson*. The lecturers disclosed that achieving environmental protection and sustainability requires a concerted efforts of all societal members. The same sentiments were expressed by the students in the Focus Group Discussions. The lecturers in culture said:

The environment and its resources are the inheritance of all the members in the society. If we care for it well, all of us would benefit from it immeasurably. On the other hand, if we wantonly destroy it, natural reprisals from our negative actions would befall all of us. That is the philosophy in the *Obi-nka-bi* Adinkra cultural symbol that we need to come together as a team to stand up against all negative activities like illegal mining, deforestation and so forth. We must equally forge a team in engaging in healthy environmental practices (LT-UEW, Personal Communication, 2/12/2017).

The students also remarked:

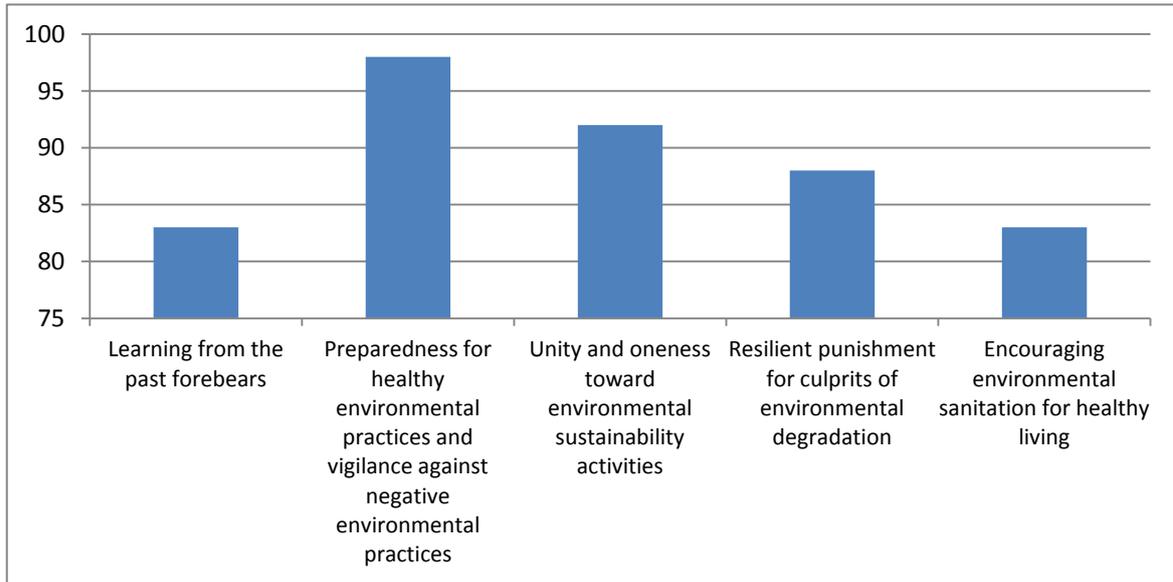
We must join hands in this environmental sustainability education in all the Ghanaian societies. The main philosophical thread in the *Nkonsonkon* is that it is in unity that we find the strength to fight for the rights of existence of all living and non-living things. We must take everyone on board before we can succeed in our efforts to save the environment and ensure the perpetual supply of its goodness to society (ST-KNUST, Personal Communication, 21/11/2017).

The environmentalists were much concerned with the recent natural reprisals such as flooding, hurricanes, storm and so forth that keeps plaguing many countries globally in these modern times. They emphasized the Adinkra cultural symbols such as the *Akoban* and *Pempamsie* that educates on the need to prepare our environments so that they can protect us from any unexpected natural reprisals by encouraging the engagement in healthy environmental practices while shunning negative environmental practices. In a Focus Group Discussion with the environmentalists, they said:

Our preparedness now will save us of all future natural reprisals. We keep on seeing the untold hardships happening to other countries due to their lack of preparedness towards some of these unfortunate but sad realities. We need to constantly alert our society members the great benefits of planting trees now, mapping up a collective effort against all negative environmental activities, and so forth. The *Akoban* and *Pempamsie* Adinkra cultural symbols educate us that we must always engage in positive environmental activities to prepare ourselves not only to cushion us for any unexpected natural reprisal, but more importantly, to save the environment for our present and future use (ENV-EPA, Personal Communication, 11/10/2017).

Figure 2 shows a graphical representation of the views of respondents in relation to the identified Adinkra cultural symbols for environmental sustainability education and the percentages of the areas of priority in their philosophical

insights. Also, Table 2 shows the philosophical insights of respondents on the identified Adinkra cultural symbols for environmental sustainability education in Ghana.



Source: Researchers' Construct

Figure 2. The Views of Respondents on the Philosophical Insights in the Adinkra Cultural Symbols

Table 2. A Summary of Respondents' views on the philosophical insights of Adinkra symbols

Philosophical Insights	Adinkra Cultural Symbols	Number of Respondents (TOTAL= 48)
Learning from the past forebears	<i>Sankofa</i> (Go Back and Take) <i>Gye-Nyame</i> (Except God)	45
Preparedness for healthy environmental practices and vigilance against negative environmental practices	<i>Akoben</i> (War Horn) <i>Aya</i> (Fern) <i>Nkyimkyim</i> (Twisting) <i>Pempamsie</i> (Preparedness and Foresight)	47
Unity and oneness toward environmental sustainability education	<i>Obi-nka-bi</i> (No one should bite the other) <i>Bese Saka</i> (Cola Nuts) <i>Nkonsonkonson</i> (Chain)	42
Resilient punishment for culprits of environmental degradation	<i>Ohene Tuo</i> (King's Gun)	42
Encouraging environmental sanitation for healthy living	<i>Duafe</i> (Wooden Comb)	40

Researchers' construct from the field survey, 2018

The following section presents pictures of the Adinkra cultural symbols and their explicit philosophical insights for environmental sustainability education from the views of respondents.

1. Adinkra Symbol: SANKOFA (Go Back and Take)

The symbol teaches the wisdom in learning from the past to help improve the future. It also teaches people to cherish and value their culture and avoid its negative adulteration. This is the symbol of positive reversion and revival. This cultural symbol also reminds us not to forget the rich cultural precepts of our forebears who lived sustainably because they wanted to be good stewards of the environment, always thinking of the future progeny. Thus, the *Sankofa* Adinkra cultural symbol (Figure 3) teaches us the need to return to the

ideals of stewardship of the environment promoted by the Ghanaian culture ideologies.



Figure 3. *Sankofa* Adinkra Symbol (Educates us of our roles as stewards of the environment and its associated accountability)

2. Adinkra Symbol: *NKYIMKYIM (Twisting)*

The adinkra symbol signifies prudence, vigilance and balance. It is a reminder that life is made up of good and bad moments. Life is not a straight path. As such, the future of life is uncertain. Therefore, humans must use the resources in great moderation to have them in perpetual abundance for future use. In addition, it cautions the ruling class to hold vigil eyes regarding how societal members use the biodiversity resources in the environment. It instructs them to set rules in restraining the wanton use of biodiversity and the abuse of the environment through unfriendly environmental activities.

In addition, the *Nkyimkyim* Adinkra cultural symbol (Figure 4) encourages people to face difficult challenges and overcome them and also take up bad situations and make them better. Therefore, it educates societal members to change their unwarranted attitudes that have destroyed the environment and its resources. It is an assurance to societies with bad environmental state that they can improve the condition for the better by engaging in environmentally friendly activities. They must also sensitize the public through environmental sustainability education.



Figure 4. *Nkyimkyim* Adinkra Symbol (Educates us on the need for society members to set good examples in protecting the environment and ensuring the sustainability of its resources)

3. Adinkra Symbol: *GYE NYAME (Except God)*



Figure 5. *Gye Nyame* Adinkra Symbol (Educates us of God's Protection for those who protect and care for the environment)

This symbol urges people to acknowledge the presence and protection of God and also to worship and venerate the creator of the universe. This is a symbol of worship and veneration and also signifies the presence and protection of God both physically and spiritually. Ghanaians believe that

when they live sustainably and care for the environment, they will earn the blessings from God. On the other hand, any unwarranted attitudes toward the environment and its resources, it will trigger the wrath of God. The *Gye Nyame* Adinkra cultural symbol (Figure 5) reminds Ghanaians that supreme deity (God) is constantly watching their conduct, especially toward his creation (the environment). This positively influences their attitudes toward the environment and its resources.

4. Adinkra Symbol: *BESE SAKA (Cola nuts)*

This adinkra symbol symbolizes togetherness and unity. The bunch refers to unity because separate pods each with a number of seeds have been brought together. This symbol reminds us of the philosophy of unity in diversity. The *Bese Saka* Adinkra cultural symbol (Figure 6) encourages the engagement in activities that brings about economic progress. It educates us that to combat the environmental crisis in society, there is the need for all societal members to join forces in doing that. Also, during environmental cleansing activities, all societal members must come together to partake in them. This is envisioned to bring economic progress because the sustainability of the environment and its resources would lead to several economic gains for a country.



Figure 6. *Bese Saka* Adinkra Symbol (Educates us of the need to engage in a united efforts against all forms of unhealthy environmental activities)

5. Adinkra Symbol: *PEMPAMSIE (Preparedness and Foresight)*

This symbol calls for the need to exhibit foresight and precautionary abilities in preparedness for any unforeseen eventualities. The *Pempamsie* Adinkra cultural symbol (Figure 7) calls for the need to exhibit foresight and precautionary abilities in preparedness for any mishaps. The world now faces a lot of natural reprisals which often attack unaware. This symbol reminds governments and society members to always sustain the environment and its resources. This would protect societies from any unforeseen natural reprisal such as earthquakes, storms, hurricanes, tsunamis and so forth. Therefore the greening and environmentally friendly activities would prepare societies, offering them a stronger buffer against all forms of future natural reprisals. It would also keep in abundance all environmental resources for the sustainable use by the present and future generations.



Figure 7. *Pempasie* Adinkra Symbol (Educates us on the importance of societal preparedness for the future through the engagement in environmental activities)

6. Adinkra Symbol: *OHENE TUO (The King's Gun)*

The *Ohene Tuo* Adinkra cultural symbol (Figure 8) signifies warding off and fighting against enemy attacks. The symbol is a cautionary message to all enemies of the environment that they would face punishments imposed by the traditional authorities and/or the government. The symbol is a reminder to all culprits of negative environmental activities that they would never go unpunished. Equally, it reminds traditional authorities and the ministries in charge of environment on the need to perform their assigned duties in the society regarding the environment, including sanctioning and punishing defaulters of environmental defiance.

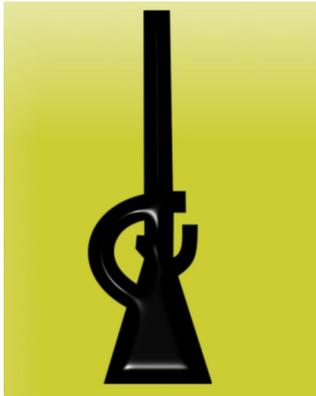


Figure 8. *Ohene Tuo* Adinkra Symbol (Educates us that there is punishment for engaging in negative environmental activities)

7. Adinkra Symbol: *Obi Nka Bi (No one should bite the other)*

The symbol signifies peace and harmony that should exist between humans. It also portrays the peaceful co-existence that is expected to exist between human beings, the environment and its resources. It has been part of the age-long Ghanaian culture that citizens are expected to live in harmony with the natural environment and its resources. The majority of the ethnic societies believe that there is an immaterial, spirit part of the environment and its biodiversity that must be respected and/or revered. Thus, the 'Obi nka bi' adinkra symbol (Figure 9) reminds citizens not to treat the environment in any cruel manner. Ensuring peaceful

co-existence between humans and nature while living in harmony with nature is the main significance of this symbol.



Figure 9. *Obi nka bi* Adinkra Symbol (Educate peaceful co-existence between human beings and the environment)

8. Adinkra Symbol: *AYA (Fern)*

This is a local plant that is known for its resilience in withstanding all weather conditions and types of soil or earth conditions. The *Aya* (Figure 10) symbolizes self-reliance and resourcefulness. It remind countries to sustainably utilize the environment and its resources to enable them to internally fulfill the supplies of industries without resorting to importations of these same resources from other countries. Countries must maintain the buoyancy and resilience of their environment and its resources to withstand future supply challenges.



Figure 10. *Aya* Adinkra Symbol (Educate countries to be resourceful and self-reliant by judiciously using the environment and its resources)

9. Adinkra Symbol: *DUAFE (Wooden comb)*

Wooden combs were/are used by Ghanaian women in local communities to enhance their personal appearance. Symbolically, the wooden combs symbolizes beauty and cleanliness. Therefore, for the maintainance of the buoyancy of the environment and its natural resources, its cleanliness is key. Therefore, the 'Duafe' adinkra symbol (Figure 11) reminds societal members to maintain the clean state of the environment by engaging in environmentally friendly activities such as sweeping, desilting of choked gutters, pruning of trees, removal of refuse and so forth. This would shield societal members from contracting diseases, thereby lowering the mortality rates of countries.



Figure 11. *Duafe* Adinkra Symbol (Educate countries to engage in sanitation and cleanliness exercises to improve the state of the environment)

10. Adinkra Symbol: NKONSONKONSON (A Chain)

It is a symbol of unity and oneness of purpose. It educates societal members to join hands in improving the state of their environment and its resources. In most Ghanaian local societies, there is the institution of communal labour systems where members of each society, from the ruling class to the subjects, are mandated to engage in environmental cleansing and sanitation activities every month. The streets, water bodies, gutters and so forth are collectively cleaned by the members in the society. Also, greening activities such as tree planting is carried out during such communal labour sessions. The Ghanaian culture postulates that with concerted efforts by all societal members, herculean tasks regarding the environment can be undertaken with less efforts. Therefore, the 'Nkonsonkonson' adinkra symbol (Figure 12) educates members of the society to always join their communities and/or taking the lead roles in environmentally friendly activities to enhance the condition of the environment and its resources.



Figure 12. *Nkonsonkonson* Adinkra Symbol (Educate society members to demonstrate cooperativeness in engaging in environmentally friendly activities to improve the state of the environment)

11. Adinkra Symbol: AKOBEN (War Horn)

This adinkra symbol (Figure 13) reminds the Ghanaian society of the popular war horn that was mostly sounded when there is a war attack on the people. The sound signals to the members in the Ghanaian local communities to get prepared to defend their community or nation during the attack. Therefore, the symbol is a reminder to societal members to always be alert and ready to defend their

communities or country toward any good cause such as environmental protection. It educates Ghanaians to always be ready to support efforts put in place by the ministries in charge of environment to protect and ensure the sustainability of the environment and its natural resources. Interestingly, the 'Akoben' adinkra symbol has been adopted by the Environmental Protection Agency of Ghana for an environmental performance rating and disclosure initiative for mining and manufacturing operations. Therefore, the symbol educates the Ghanaian people to be loyal and supportive of all environmental initiatives and programs organized in their communities.

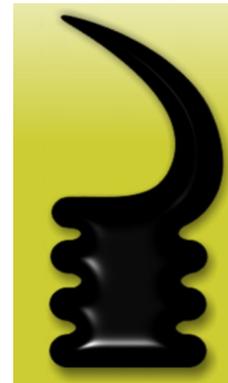


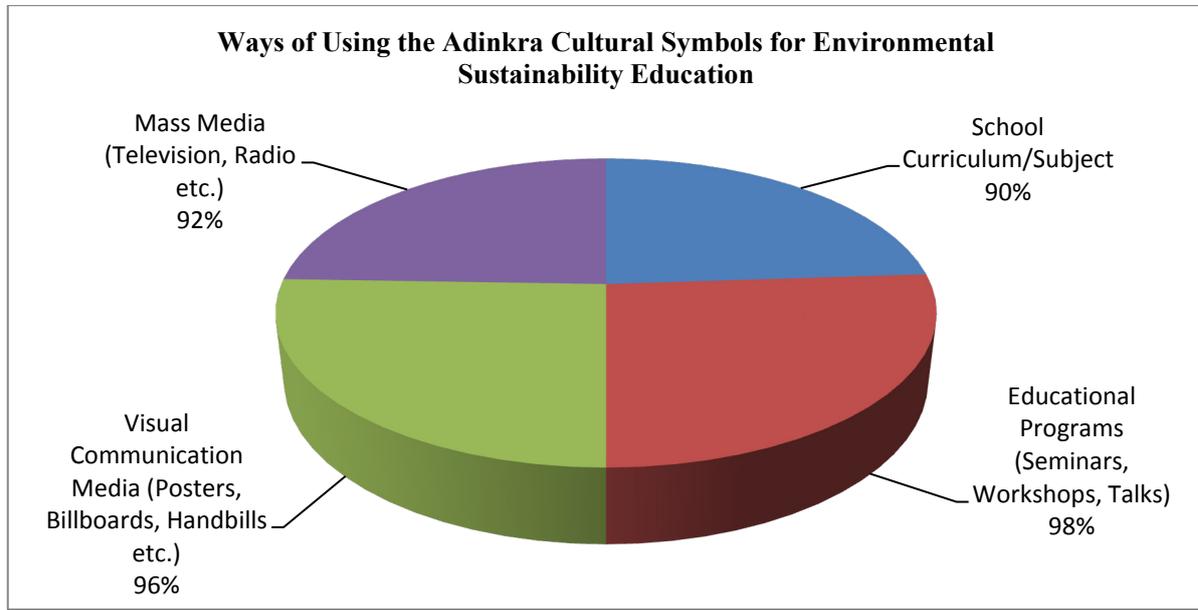
Figure 13. *Akoben* Adinkra Symbol (Educate society members to be loyal, alert, and ready to support all environmentally healthy activities organized in their respective communities)

3.2. How the Identified and Described Adinkra Cultural Symbols could be Used as an Instructional Tool for Environmental Sustainability Education

The researchers inquired from respondents the viable ways that the Adinkra cultural symbols could be used for environmental sustainability education in Ghana. The views from respondents varied greatly (Figure 14). However, they all suggested wide publicity avenues and tools. The lecturers, students and environmentalists suggested using educational platforms such as incorporating environmental sustainability education via cultural symbols into the school curriculum. The lecturers told the researchers:

Targeting the educational institutions with the mandate to educate learners on environmental sustainability using the Adinkra cultural symbols. These informative cultural symbols must be incorporated into the Environmental Studies and Social Studies subjects taught in the Primary, Junior and Senior High schools in Ghana (LT-KNUST, Personal Communication, 14/12/2017).

The respondents suggested the appointment of knowledgeable elders as resource persons to schools to assist teachers in carrying out the environmental sustainability education. At the higher education level, a greater section of the respondents suggested the organization of seminars, workshops and talk shows for higher education students. In a Focus Group Discussion, the students suggested that:



Source: Source: Researchers' Construct

Figure 14. Suggested Ways for Using Adinkra Cultural Symbols for Environmental Sustainability Education

The environmental agencies in Ghana must collaborate with cultural experts so that seminars, workshops and talk shows in all tertiary institutions of Ghana to educate students about the Adinkra cultural symbols and their philosophical insights for environmental protection. Many of the students take pride in their culture and particularly the Adinkra cultural symbols. Yet, they don't know their importance in relation to environmental protection. Such avenues would be a great source of enlightening them on the environmental sustainability education latent in these Adinkra cultural symbols (ST-KNUST, Personal Communication, 17/12/2017).

The heads of the environmental agencies also suggested the organization of such workshops on the use of Ghanaian cultural symbols for environmental sustainability education for the environmentalists who carry out environmental protection sensitization campaigns and education in Ghanaian communities. They admitted that these workshops would enlighten environmentalists so that they would in turn use the understanding in educating those in the Ghanaian communities, especially in the local communities where the Adinkra cultural symbols are most cherished.

The respondents also suggested the use of visual communication tools such as banners, posters, billboards, signboards and so forth for sensitizing the general public on environmental sustainability. They suggested the placing of billboards with the Adinkra cultural symbols and their philosophical meanings in relation to environmental protection at vantage spots in the community. The traditional authorities and elderly residents suggested the use of the media outlets such as the radio, and television stations to air programmes on the philosophical insights of the Adinkra cultural symbols for environmental sustainability education.

They suggested that the information centres in the various local communities in Ghana could be used as platforms for promoting discussions on the benefits of ensuring environmental protection using the Adinkra cultural symbols. Also, they said that the television and radio stations must also be targeted as publicity avenues for educating the Ghanaian populace on environmental sustainability via the Adinkra cultural symbols.

Also, the traditional authorities suggested the grasping of communal meeting days and taboo days in local communities as opportunities for relaying such environmental sustainability education. They disclosed that during these days, all society members would be available for such an education, making the education effective.

4. Conclusions

The study was aimed at investigating the Adinkra cultural symbols that could be used for environmental sustainability education in Ghana due to the high impacts of culture in the Ghanaian community. Also, it was finally to suggest proactive ways of utilizing the identified Adinkra cultural symbols as instructional tools for environmental sustainability education in Ghana. Though the study revealed that numerous Adinkra cultural symbols had philosophical values that could be used for environmental sustainability education, eleven (11) Adinkra cultural symbols have been discussed thoroughly. The philosophical insights from the Adinkra cultural symbols included learning from the past forebears [*Sankofa* (Go Back and Take), *Gye-Nyame* (Except God)], preparedness for healthy environmental practices and vigilance against negative environmental practices [*Akoben* (War Horn), *Aya* (Fern), *Nkyimkyim* (Twisting), *Pempamsie* (Preparedness and Foresight)], unity and oneness toward

environmental sustainability activities [*Obi-nka-bi* (No one should bite the other), *Bese Saka* (Cola Nuts), *Nkonsonkonson* (Chain)], resilient punishment for culprits of environmental degradation [*Ohene Tuo* (King's Gun)] and encouraging environmental sanitation for healthy living [*Duafe* (Wooden Comb)]. It was suggested that the use of educational programs, visual communication media, mass media, and the school curriculum are viable platforms to educate the members in the Ghanaian society on environmental sustainability from the philosophical imports of the Adinkra cultural symbols. The research is tasking environmental agencies to collaborate with cultural experts so that the Adinkra cultural symbols could be used to maximize environmental sustainability education in Ghana.

ACKNOWLEDGEMENTS

The researchers thank sincerely, the traditional authorities and the elderly residents in Buoyem, Anyinam-Kokofu and Kumawu as well as the environmentalists and conservationists in the Environmental Protection Agency and the Resource Management Support Centre of the Forestry Commission all in the Ashanti Region of Ghana for supporting the research.

REFERENCES

- [1] Adom, D. 2009, *The influence of European elements on Asante textiles*, Master's thesis, Kwame Nkrumah University of Science and Technology, Kumasi; Ghana.
- [2] Adom, D. 2014, *General knowledge in art for senior high schools*, Adom Series Publications, Kumasi.
- [3] Adom, D. 2016, 'The philosophical epistemologies of Asante proverbs in Ghana's biodiversity conservation', *Journal of Environment and Earth Science* ISSN 2224-3216 (Paper) ISSN 2225-0948, Vol. 6, No. 7.
- [4] Adom, D., Asante, E.A. & Kquofi, S. 2016, 'Adinkra: an epitome of Asante philosophy and history', *Research on Humanities and Social Sciences*, vol. 6, no. 14.
- [5] Adom, D., Kquofi, S. & Asante, E.A. 2016, 'The high impacts of Asante indigenous knowledge in biodiversity conservation issues in Ghana: The case of the Abono and Essumeja Townships in Ashanti Region', *British Journal of Environmental Sciences*, vol.4, no.3, pp. 63-78.
- [6] Ardoin, N.M. & Ryan, S.M. 2011, *Environmental and sustainability education in natural world heritage sites: a literature review*, Report for the Galapagos Conservancy, <https://www.galapagos.org> (Accessed 12/11/2017).
- [7] Asante, E.A., Adom, D. & Arthur, N.A.P. 2017, Promoting environmental and infrastructural development through selected cultural practices, *6th International Conference on Infrastructural Development in Africa*, pp. 561-579 www.icida.knust.edu.gh.
- [8] Best, J.W. & Kahn, J. 2006, *Research in education*, Prentice Hall of India Pvt. Ltd, New Delhi.
- [9] Cranford, N 2016, *Difference between positivist, interpretive and critical sociology*, 28 February 2016, <http://newmedia@seattlepi.com>.
- [10] Creswell, J.W. (2009). *Research Design*, 3rd edn, SAGE Publications, Inc., United States.
- [11] Denzin N. K. and Lincoln, Y. S., 1994, *Introduction: entering the field of qualitative research*, in Denzin N. K. and Lincoln Y. S., (eds) *Handbook of qualitative research*, Thousand Oaks: Sage Publications, 1-17.
- [12] Erlanson, D.A., Harris, E.L., Skipper, B.L. & Allen, S.D. 1993, *Doing naturalistic inquiry: a guide to methods*, Newbury Park, CA: SAGE.
- [13] Fraenkel, J, Wallen, N & Hyun, H 2012, *How to design and evaluate research in education* (8th edn), Mc Graw-Hill Companies, New York.
- [14] Ghana National Biodiversity Strategy and Action Plan (NBSAP) 2016, *National biodiversity strategy*, Ministry of Environment, Science, Technology and Innovation, Ghana.
- [15] Iyer-Raniya, U. & Andamon, M.M. 2013, *Integrating sustainability education into existing and built environment curriculum*, ProPER.Net Working Paper, UNU-IAS.
- [16] Koh, E.T. & Owen, W.L. 2008, 'Descriptive research and qualitative research', *Introduction to Nutrition and Health Research*, pp. 219-248.
- [17] Kumekpor, KB 2002, *Research Methods & Techniques of Social Research*, SonLife Printing Press and Services, Ghana.
- [18] Madikonza, C. & Latz-Sisitka, H. 2016, 'Emergence of environment and sustainability education (ESE) in teacher education contexts in Southern Africa: a common good concern', *Education Research for Social Change*, vol. 5, no. 1, pp. 107-130.
- [19] Milton, K 1996, *Environmentalism and Culture Theory: Exploring the Role of Anthropology in Environmental Discourse*, Routledge Taylor and Francis Group, London.
- [20] Moriarty, J 2011, *Qualitative methods overview (SSCR methods reviews)*, National Institute for Health Research School for Social Care, London.
- [21] Pretty, J, Adams, B, Berkes, F, Ferriera de Athayde, S, Dudley, N, Hunn, E, Maffi, L., Milton, K, Rapport, D, Robbins, P, Sterling, E, Stoltin, S, Tsing, A, Vintinner, E, & Pilgrim, S 2009, 'The intersections of biological diversity and cultural diversity: toward integration', *Conservation and Society*, vol. 7, no. 2, pp. 100-112.
- [22] Scott, D. & Usher, R. 2011, *Researching education: data methods and theory in educational inquiry*, 2nd edn, Continuum, London.
- [23] Sund, R. & Lysgaard, J.G. 2013, 'Reclaim 'education' in environmental and sustainability education research', *Sustainability*, vol. 5, pp. 1598-1616.
- [24] Sustainable Development Education Panel 1999, *Education for Sustainability in Local Government Handbook*, pp. 35-52, www.aries.mg.edu.au/portal (Accessed 13/10/2017).
- [25] The Association of Educational Communications and Technology 2001, *The handbook of research for educational*

communications and technology, www.member.aect.org (Accessed 5/8/2017).

- [26] UNESCO 1997, *World heritage education programme-UNESCO*, <https://whc.unesco.org> (Accessed 9/9/2017).
- [27] UNESCO 2015, *Initiating the United Nations decade of education for sustainable development in Australia: Report of a national symposium*, Melbourne: Australian National Commission for UNESCO.
- [28] Wakkary, R. 2008, *Qualitative research methods-Data analysis and representation, Week 8*, rwakkary@sfu.ca (Accessed 4/9/2017).