

Reviving Folklore Education as a Means for Sustainable Resource Management Practices in Africa

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Abstract

We carried out a field experiment to investigate the impact of incorporating environmentally focused African folklore on children's environmental consciousness and sustainability practices. Fieldwork was conducted among 8 private primary schools in Kaduna state and the Federal Capital Territory (FCT) of Nigeria. The target audience comprised children aged 8 to 13 years old in grades 4-6. An experimental design was used, randomly assigning students to either a treatment or control group. In the treatment group, the teacher told the Nigerian folktale "Why the Sky is Far Away" during class, while the control group received regular instruction. Results indicated a positive influence on environmental awareness and resource management skills among students exposed to folklore, highlighting the potential of indigenous education in fostering a sustainable future. This study contributes valuable insights into the role of culturally relevant educational approaches in promoting environmental consciousness and sustainable practices among pre-teen students.

Introduction

Goal 4 of the Sustainable Development Goals aims to provide inclusive and equitable quality education opportunities, including lifelong learning. This paper focuses on improving the quality of education in Africa by utilizing traditional folklore, which has been a significant means of transferring indigenous knowledge and an essential aspect of education and socialization in African societies. However, folklore has become scarce in modern African society and is mostly found in informal settings.¹

The study aims to investigate whether environmentally focused folklore can enhance individuals' environmental consciousness and sustainability practices. To conduct the research, a survey experiment was carried out among elementary school children from private primary schools in Kaduna and Abuja, Nigeria. The chosen age group of children between 8 and 13 years old is critical for interventions to have long-term behavioral impacts as they are receptive to adopting new behaviors.

The research findings indicate that introducing indigenous knowledge, such as African folktales that highlight traditional ecological knowledge, into early childhood education can strengthen children's awareness and responsibility towards the environment. This approach aligns with an ecojustice approach to education that addresses the cultural crisis caused by environmental issues, emphasizing the need to value indigenous knowledge and culture.²

This paper contributes to understanding the role of folklore in promoting sustainable resource management practices through ecojustice education. By exploring how indigenous knowledge influences attitudes and behaviors towards resource management, frameworks can be developed to support sustainable practices and environmental consciousness among the young population in Africa. Reviving African folklore in education has the potential to advance quality education and foster a sustainable future for the continent.

African Folklore as a means of child Socialization and Traditional forms of Education

Folklore has historically played a crucial role in traditional African education, transmitting indigenous knowledge and fostering a deep sense of responsibility towards nature.³ However, the introduction of Western-style education during colonialism marginalized traditional practices and neglected environmental consciousness. After gaining independence, some African countries attempted to revive elements of traditional knowledge in the curriculum, but environmental education remained underemphasized.⁴

¹ Omolewa, Michael. "Traditional African Modes of Education: Their Relevance in the Modern World." *International Review of Education* 53, no. 5 (November 1, 2007): 593–612. <https://doi.org/10.1007/s11159-007-9060-1>.

² Abah, J., P. Mashebe, and D. D. Denuga. "Prospect of Integrating African Indigenous Knowledge Systems into the Teaching of Sciences in Africa." *American Journal of Educational Research* 3, no. 6 (January 23, 2015): 668–73. <https://doi.org/10.12691/education-3-6-1>.

³ Yankah, Philip M. Peek, Kwesi, ed. *African Folklore: An Encyclopedia*. New York: Routledge, 2004. <https://doi.org/10.4324/9780203493144>.

⁴ Shizha, E. "Reclaiming Our Indigenous Voices: The Problem with Postcolonial Sub-Saharan African School Curriculum," September 2013. <http://hdl.handle.net/10125/29818>.

In recent years, there has been a growing awareness of the importance of environmental education in Africa, with efforts to include it in elementary school curricula. Nigeria, for example, has integrated environmental studies into its primary school curriculum, covering topics such as conservation, climate change, and waste management. Various organizations have also initiated programs to promote environmental awareness among students.

Despite these efforts, challenges like limited resources and teacher training hinder the full integration of environmental education. Addressing these obstacles requires improving teacher capacity, providing adequate resources, and adopting a systematic approach.

This study aims to evaluate the impact of incorporating traditional knowledge, such as folklore, into modern elementary education in Africa. By quantitatively assessing the effectiveness of this approach, the research seeks to contribute valuable insights into enhancing environmental consciousness and sustainable practices among young students on the continent.

African folklore as a vehicle for sustainable resource management practices

The current ecological crisis caused by climate change and unsustainable resource management necessitates a shift toward environmental education and sustainable practices.^{5,6} Indigenous knowledge, including African folklore, holds the potential to address these challenges. The standardization and privatization of resources have exacerbated the crisis^{7,8}; requiring a new approach to education centered on the environment, environmental justice, and sustainability.

African leaders have sought solutions to climate-induced violence and environmental challenges through Western technology and aid. However, a more sustainable and locally sourced knowledge base is needed to yield long-term benefits. Folklore's inclusion in formal education has been advocated due to its positive influence on young minds and its potential to bridge the gap between traditional and scientific knowledge.^{9,10} Integrating indigenous knowledge into education can empower individuals to make informed decisions about their environment,

⁵ Bowers, Chet. *The Way Forward: Educational Reforms That Focus on the Cultural Commons and the Linguistic Roots of Ecological/Cultural Crisis*. Eugene, OR: Eco-Justice Press, 2012.

⁶ ———. *University Reform in an Era of Global Warming*. Eugene, OR: Eco-Justice Press LLC, 2011.

⁷ Shiva, Vandana. *Staying Alive: Women, Ecology, and Development*. 10/31/10 edition. Brooklyn, N.Y.: South End Press, 2010.

⁸ Dentith, Audrey M., and Onah P. Thompson. "Teaching Adult Ecojustice Education." *New Directions for Adult and Continuing Education* 2017, no. 153 (2017): 65–75. <https://doi.org/10.1002/ace.20222>.

⁹ Banda, Dennis, and W. John Morgan. "Folklore as an Instrument of Education among the Chewa People of Zambia." *International Review of Education* 59, no. 2 (July 1, 2013): 197–216. <https://doi.org/10.1007/s11159-013-9353-5>.

¹⁰ Appiah-Opoku, Seth. "Indigenous Knowledge and Environmental Management in Africa: Evidence from Ghana." In *Africa's Development in the Twenty-First Century: Pertinent Socio-Economic and Development Issues*. Ashgate, 2006.

resources, and livelihoods,¹¹ promoting sustainable practices.^{12,13} Indigenous people have effectively managed their territories for generations, offering valuable insights into resource conservation and management strategies, such as agroforestry and medicinal plant cultivation.¹⁴

Incorporating indigenous knowledge in education systems can preserve cultural diversity, promote social cohesion, and instill a sense of pride among indigenous communities.^{15,16} By blending traditional and scientific knowledge, individuals can build resilience and adapt to changing environmental conditions caused by climate change and other hazards.^{17,18,19} To test the impact of African folklore on environmental awareness and resource management, a survey experiment was conducted among preteens in private schools in Kaduna and the FCT. The study aims to shed light on the potential of folklore in promoting sustainable practices and environmental consciousness among the young population in Africa.

Method

The fieldwork conducted in 8 private primary schools in Kaduna state and the FCT, Nigeria, aimed to determine whether environmentally focused folklore can improve children's environmental consciousness and sustainability practices. The target audience comprised children aged 8 to 13 in grades 4-6, as this developmental stage is critical for shaping values

¹¹ Tharakan, John. "Integrating Indigenous Knowledge into Appropriate Technology Development and Implementation." *African Journal of Science, Technology, Innovation and Development* 7, no. 5 (September 3, 2015): 364–70. <https://doi.org/10.1080/20421338.2015.1085176>.

¹² Owuor, Jenipher. "Integrating African Indigenous Knowledge in Kenya's Formal Education System: The Potential for Sustainable Development." *Journal of Contemporary Issues in Education* 2, no. 2 (2007). <https://doi.org/10.20355/C5Z594>.

¹³ Haines, Jelina, Jia Tina Du, and Aunty Ellen Trevorrow. "Cultural Use of ICT4D to Promote Indigenous Knowledge Continuity of Ngarrindjeri Stories and Communal Practices." *Journal of the Association for Information Science and Technology* n/a, no. n/a. Accessed July 27, 2023. <https://doi.org/10.1002/asi.24710>.

¹⁴ Kiptot, Evelyne, and Steven Franzel. "Gender and Agroforestry in Africa: A Review of Women's Participation." *Agroforestry Systems* 84, no. 1 (January 1, 2012): 35–58. <https://doi.org/10.1007/s10457-011-9419-y>.

¹⁵ Deekor, Leelee Nwiibari, and Job Maekae. "Culture and Cultural Diversity in Sustainable Development: The Nigerian Experience." *Journal of Economics and Sustainable Development* 6, no. 13 (2015): 249.

¹⁶ Bandarin, Francesco, Jyoti Hosagrahar, and Frances Sailer Albernaz. "Why Development Needs Culture." *Journal of Cultural Heritage Management and Sustainable Development* 1, no. 1 (January 1, 2011): 15–25. <https://doi.org/10.1108/20441261111129906>.

¹⁷ Darko, Isaac Nortey. "Environmental Stewardship and Indigenous Education in Africa: Looking Beyond Eurocentric Dominated Curricula." *Counterpoints* 443 (2014): 179–206.

¹⁸ Bohensky, Erin L., James R. A. Butler, and Jocelyn Davies. "Integrating Indigenous Ecological Knowledge and Science in Natural Resource Management: Perspectives from Australia." *Ecology and Society* 18, no. 3 (2013).

¹⁹ Berkes, Fikret, and Nancy J. Turner. "Knowledge, Learning and the Evolution of Conservation Practice for Social-Ecological System Resilience." *Human Ecology* 34, no. 4 (August 1, 2006): 479–94. <https://doi.org/10.1007/s10745-006-9008-2>.

and perspectives.^{20,21} Educating children about ecojustice consciousness and resource management early on can foster good management preferences in adulthood²² and influence household and community behaviour.^{23,24}

To explore the potential impact of folklore, the study adopted an experimental design, randomly assigning students to treatment and control groups. In the treatment group, the teacher told the African folklore story "Why the Sky is Far Away" after which students filled out surveys. The story, originating from the Bini tribe, imparts valuable lessons about respecting nature and using resources wisely while emphasizing the importance of community and cooperation.

Conversely, the control group experienced regular classes without folklore intervention. Both groups answered surveys evaluating their environmental awareness and management skills by responding to scenarios involving water and energy resource stewardship.

The study seeks to assess whether incorporating folklore into education can increase environmental awareness and foster sustainable resource management practices among young students in Nigeria. The results are anticipated to shed light on the potential of folklore as an educational tool to promote environmental consciousness and responsible resource management in the face of pressing ecological challenges.

These options included:

- a) Stop and attempt to fix the leaking pipe yourself even though you are still very hungry.
- b) Ask your parent (or guardian) to wait while you go to the Head Teacher's office to report the incident even though you are still very hungry.
- c) Walk past the leaking pipe and get into the car. On your way home, you will tell your parents (or guardian(s)) about it and hope that they will inform the school.
- d) Walk past the leaking pipe and hope that someone else sees it and fixes it. You need to eat something as soon as possible because a child should not be hungry for too long.
- e) Walk past the leaking pipe and hope that someone else sees it and fix it. After all, it is not a child's responsibility to fix what they did not destroy.

The study explored students' environmental consciousness through scenarios involving resource preservation and energy stewardship. Options were presented to assess their level of

²⁰ Appiah-Opoku, Seth. "Indigenous Beliefs and Environmental Stewardship: A Rural Ghana Experience." *Journal of Cultural Geography* 24, no. 2 (March 1, 2007): 79–98. <https://doi.org/10.1080/08873630709478212>.

²¹ Mcleod, Saul. "Jean Piaget and His Theory & Stages of Cognitive Development." *Simply Psychology* (blog), 2018.

²² Witt, Susan D., and Katherine P. Kimple. "'How Does Your Garden Grow?' Teaching Preschool Children about the Environment." *Early Child Development and Care* 178, no. 1 (January 1, 2008): 41–48. <https://doi.org/10.1080/03004430600601156>.

²³ Collado, Silvia, Gary W. Evans, José A. Corraliza, and Miguel A. Sorrel. "The Role Played by Age on Children's pro-Ecological Behaviors: An Exploratory Analysis." *Journal of Environmental Psychology* 44 (December 1, 2015): 85–94. <https://doi.org/10.1016/j.jenvp.2015.09.006>.

²⁴ Fuente, D, and D Whittington. "Randomized Control Trials." In *In Routledge Handbook of Public Policy*. New York: Routledge & CRC Press.

consciousness, with the aim of understanding their prioritization of sustainable practices. Students were asked to make choices based on resource conservation, indicating their level of ecological awareness and willingness to forgo immediate self-gratification. The study sought to gauge the effectiveness of environmentally focused folklore in improving students' environmental consciousness and sustainability-related practices.

The options are:

- a) Let them cook the normal amount of food and save the excess for another day mainly to preserve the trees from being over-exploited.
- b) Let them cook the normal amount of food and save the excess for another day mainly to make sure that students are not over-fed to prevent potential health issues associated with overfeeding.
- c) Let them cook all the excess food and encourage students to eat more than one plate of food for lunch even though more trees than normal will be used.
- d) Let them cook all the excess food and encourage students to eat more than one plate of food for lunch even though they will be overfed.

The study assessed water stewardship options from A to D to gauge environmental awareness. Prioritizing resource preservation over individual gratification indicated higher environmental consciousness. The findings were further validated through additional questions and analysis.

Results:

Our analysis began with a descriptive statistic of our dataset presented in Table 1. The majority of our respondents, over 80 percent, fall within the age range of 9 to 11 years. Additionally, 298 pupils are in Primary 4 and 5, which accounts for approximately 84 percent of the total pupils in our study. Out of the total respondents, 171 are girls, comprising approximately 48 percent of the data.

Control

	N	%	Mean	SD	Min	Max
Age	199		10.095	1.104	8	13
Gender	199		1.492	.501	1	2
<i>Female</i>	101	50.75				
<i>Male</i>	98	49.25				
Class	199		1.643	.65	1	3
<i>Primary 4</i>	90	45.23				
<i>Primary 5</i>	90	45.23				
<i>Primary 6</i>	19	9.55				

Folklore

Age	156		9.673	1.17	8	13
Gender	156		1.551	.499	1	2
<i>Female</i>	70	44.87				
<i>Male</i>	86	55.13				
Class	155		1.735	.65	1	3
<i>Primary 4</i>	78	50.32				
<i>Primary 5</i>	40	25.81				
<i>Primary 6</i>	37	23.87				

Table 1: Summary Statistics

We conducted a comparison of the means of two groups for the outcome variables of water and energy stewardship. The results showed that for the water stewardship test, those who received indigenous environmentally related education had a mean of 2.1, while the control group had a mean of 3.1. A higher number indicates lower environmental consciousness and stewardship. These findings support our expectations that the incorporation of folklore improves the chances of children developing pro-environmental values. The results also showed a 20 percent difference in the attitudes of these pupils towards natural resource management. Similarly, for energy stewardship, pupils who received folklore-incorporated education had a mean of 1.3, compared to the control group's mean of 2.1. This indicates that those who received folklore-incorporated education were about 25 percent more likely to be better environmental stewards than those in the control group. Please refer to Figure 1 for more details.

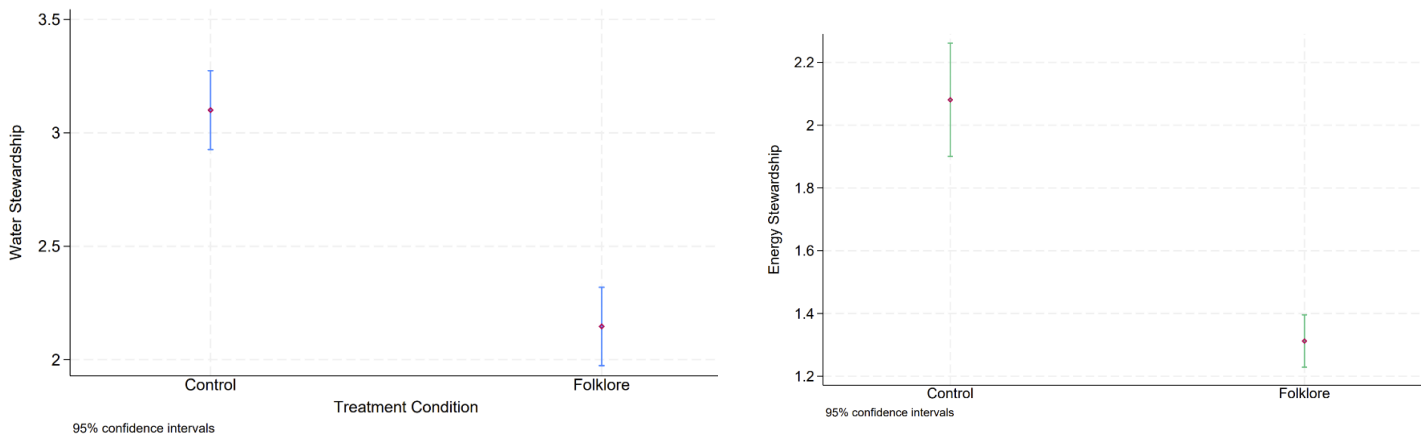


Figure 1:

Although there may be variations in the outcome variables' mean values, we understand that other factors, such as the type or quality of education received in these schools and demographic factors, can also impact these differences. To address these potentially confounding variables, we conducted a linear regression analysis with school-fixed effects.

The findings are presented in Figure 2.

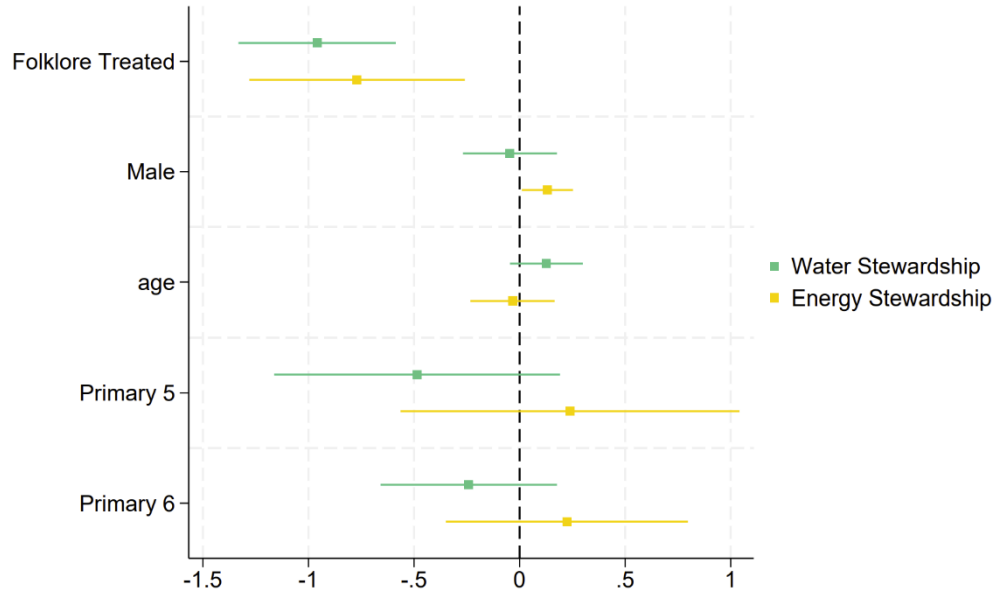


Figure 2: Results of Linear Regression (School Fixed Effects)

Our research indicates that students who are taught African folklore as part of their education are less likely to mismanage natural resources, even after accounting for other variables. We used ordinary least-squares regression to arrive at this conclusion, and further analysis using multinomial regression produced similar results, which can be found in Appendix 1. Additionally, our data suggest that female students tend to be better energy stewards than their male counterparts, as demonstrated in Model 2 of Table 2.

After observing a statistically significant gender difference in the energy stewardship test, we conducted additional analysis to determine if the difference was influenced by the treatment effect. This involved examining the treatment conditions about gender. Our findings, as shown in Model 4 of Table 2, reveal that the interaction term was not statistically significant. Therefore, it suggests that being exposed to an education that incorporates traditional knowledge has the same effect on both genders and does not vary by gender.

VARIABLES	(1) Water Stewardship	(2) Energy Stewardship	(3) Water Stewardship	(4) Energy Stewardship
Folklore	-0.959*** (0.158)	-0.770*** (0.216)	-0.858*** (0.245)	-0.681** (0.200)
Male	-0.0461 (0.0940)	0.132** (0.0511)	0.0394 (0.0287)	0.208*** (0.0587)
Folklore*Male			-0.196 (0.209)	-0.174 (0.0933)
Age	0.127 (0.0730)	-0.0340 (0.0844)	0.125 (0.0729)	-0.0356 (0.0838)
Class 5	-0.486 (0.286)	0.239 (0.340)	-0.486 (0.286)	0.238 (0.337)
Class 6	-0.241 (0.176)	0.224 (0.243)	-0.234 (0.179)	0.229 (0.237)

Constant	2.085** (0.637)	2.230* (0.965)	2.062** (0.647)	2.208* (0.950)
Observations	353	352	353	352
R-squared	0.165	0.132	0.166	0.134

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Results of Linear Regressions (School Fixed Effects)

Discussion and Conclusion

The World Commission on Environment and Development acknowledges that certain indigenous lifestyles are at risk of disappearing due to insensitive development that has marginalized indigenous communities. The commission recommends that indigenous peoples be given greater participation in the creation of policies that pertain to resource development within their respective ecosystems. An effective approach to fulfilling this recommendation is by incorporating indigenous knowledge into formal education. Our research demonstrates that traditional ecological knowledge systems have significant implications for the development, utilization, and regulation of ecological resources.

Although we made every effort to maintain rigorous standards in our research, it has some limitations. We must acknowledge that we only sampled private schools in Nigeria, even though the majority of children attend public schools. The reason for this choice was administrative challenges in obtaining approvals for public school research. Additionally, all the schools studied were located in urban areas, and schools in rural areas with more traditional practices may differ systematically. Finally, our research is a cross-sectional study, and the findings can only speak to short-term effects. To determine if the observed effects sustain in the medium and long term, further research is necessary. While studies suggest that early childhood education has long-term effects, more research is needed to answer this question.

The current formal education system has many strengths but also has some shortcomings. One of these is the lack of emphasis on communal knowledge, which could help address public goods problems. By incorporating indigenous knowledge into education curricula, we could provide a more comprehensive education that values both the individual and the community. Indigenous knowledge includes cultural experiences, epistemologies, and empiricisms related to ecology, subsistence systems, medical practices, music, oral traditions, and technology.^{25,26} Studies have shown that indigenous knowledge can increase awareness of the interconnectedness and interdependencies between individuals, society, and the earth, leading to a spirit of reciprocity and partnership.²⁷ Empirical evidence supports these claims

²⁵ Darko, I. "Environmental Stewardship"

²⁶ Appiah-Opoku, S. "Indigenous Knowledge" 2006

²⁷ Appiah-Opoku, S. "Indigenous Beliefs" (March 1, 2007):