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CLIMATE CHANGE AND EDUCATIONAL MANAGEMENT: HOW SCHOOL CALENDARS CAN SUPPORT ENVIRONMENTAL LEARNING

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Abstract: Climate change is one of the most pressing challenges facing the world today, with wide ranging effects on health, the economy, agriculture, and education. In response to increasing occurrences of floods, wildfires, storms, and heatwaves, there is a growing need for educational systems to move beyond traditional agriculture or colonial based school calendars. These outdated models hinder the development of climate literacy and ignore the dynamic relationship between learning and nature.

This study investigates the role of climate responsive school calendars as tools for integrating environmental education. Drawing on international case studies from Finland, Kenya, and selected US regions, the paper explores how adaptive timetables aligned with seasonal and ecological realities can enhance student engagement through outdoor experiential learning and sustainability focused instruction. The research adopts a qualitative comparative approach, examining policy documents, curriculum frameworks, and climate adaptation practices in schools across diverse contexts.

Findings suggest that integrating climate change education across subjects, supported by teacher training, community involvement, and flexible academic calendars, significantly boosts environmental awareness and problem solving capacity among students. The study concludes that school calendars are a strategic but underutilized medium for promoting climate literacy and nurturing a generation prepared to lead sustainable change.

Keywords: climate change, environmental education, school calendar, sustainability, academic flexibility, experiential learning, climate literacy, curriculum integration.

Introduction

Climate change is not only an environmental and economic concern but also a growing educational challenge that demands innovative management solutions. The educational sector, particularly in low- and middle-income countries, is increasingly vulnerable to the impacts of extreme climate events such as flooding, prolonged droughts, and heatwaves. These events disrupt the school calendar, destroy infrastructure, and displace learners. The Intergovernmental Panel on Climate Change (IPCC, 2023) notes that climate-related risks to education systems are projected to intensify, particularly in vulnerable regions like sub-Saharan Africa.

In Nigeria, despite the frequent climate disruptions, most school structures still operate rigid calendars rooted in colonial and agricultural legacies that do not reflect local environmental realities. This dissonance

between ecological patterns and educational planning highlights the need for climate-responsive academic timetabling. According to UNESCO (2022), rethinking school calendars to incorporate environmental adaptability is critical for preparing young people to thrive amid ecological uncertainty and develop adaptive resilience.

Various studies have indicated that learning problems caused by weather-related issues like floods and heatwaves result in high rates of learning loss, especially among underserved groups that lack infrastructure for remote or alternative learning methods. According to Ogunyemi (2022), annual flooding during the rainy season in parts of Enugu State has led to frequent school closures with negative implications for attendance, safety, and academic performance. This is compounded by the fact that most school managers do not integrate environmental forecasting into their academic planning, resulting in reactive emergency shutdowns rather than proactive measures.

Similarly, the Food and Agriculture Organization and UNICEF (2023) have expressed concern that the unpreparedness of African education systems undermines consistent learning and affects the psychosocial well-being of students. Environmental education is often neglected due to the lack of structured, calendar-based adaptation activities, which deprives learners of the chance to engage with nature through authentic learning experiences.

Conversely, case studies from Kenya and Finland demonstrate how flexible school calendars can facilitate environmental learning and adaptation to seasonal changes. In these countries, school administrators adjust term dates in anticipation of climate events and integrate activities such as tree planting, outdoor learning, and eco-literacy programs into the academic calendar. UNESCO (2022) highlights how such approaches foster climate-aware learning cultures and reduce risk exposure for students.

Okaka and Otieno (2023) found that climate-responsive school calendars in Kenya significantly increased students' knowledge of ecosystems and encouraged active participation in community environmental initiatives. These changes also enhanced localized, practical knowledge and empowered students to become civically responsible. A similar model, if localized and adopted in Nigeria, could revolutionize academic timetabling by embedding experiential environmental learning.

One of the primary limitations of current climate change education models is their restriction to science classes. This narrow approach overlooks the interdisciplinary nature of climate knowledge, which can be integrated into literature, civic education, and social studies. Anderson et al. (2021) argue that effective environmental education must permeate all subjects and be structurally embedded into the functioning of school systems, including the synchronization of school activities with the academic calendar. They propose that schools should not only teach sustainability but also embody it through their operations and schedules.

Incorporating sustainability into the school calendar enables the introduction of thematic weeks, nature excursions, eco-clubs, and weather-responsive recess periods. These elements foster an embodied, experiential sense of environmental awareness, allowing education systems to contribute more meaningfully to climate adaptation efforts. Such structural alignment empowers students with agency and responsibility in the climate conversation.

Educational managers and school leaders have a pivotal role in developing academic schedules that both safeguard students and provide platforms for climate education. Schools with a clear sustainability vision can schedule awareness weeks, align terms with non-hazardous seasons, and include co-curricular activities like green projects or environmental sanitation drives. Bangay (2021) emphasizes that these reforms are not merely administrative but also pedagogical interventions that demonstrate the urgency of climate issues and promote flexible, inclusive learning.

Climate-based academic scheduling remains an untapped opportunity in Nigeria, particularly in regions like Enugu East. While national curriculum reforms may require long-term strategies, calendar restructuring is a local and cost-effective intervention that can be implemented quickly. School leaders and governing bodies can adjust term dates based on weather patterns and implement local environmental programs without waiting for federal directives. According to Adetunji and Akinyemi (2023), climate-smart time management in schools is essential for building resilience and adaptive capacity among African learners.

This study sets out to investigate how academic calendars can be utilized as a tool for environmental education, with a focus on how school administrators in Enugu East can structure school time to enhance environmental protection and learning.

Statement of the Problem

Despite the increasing evidence of climate change effects, such as erratic rainfall, extreme heat, and flooding, most schools in Nigeria continue to operate rigid, colonial-era academic calendars. These calendars do not accommodate the environmental disruptions that frequently affect learning continuity, student safety, and infrastructure stability. The reliance on fixed school timetables during hazardous weather periods exposes learners to risks and results in unplanned closures and academic setbacks. Furthermore, climate literacy is rarely embedded in school structures beyond science subjects, limiting students' capacity for environmental engagement. While international models have demonstrated that flexible academic calendars can promote climate education and seasonal safety, Nigerian educational institutions have not fully embraced this strategy. The lack of adaptive planning in school management thus poses a critical barrier to integrating environmental learning and climate resilience within the Nigerian education system, particularly at the secondary level in areas like Enugu East Local Government Area.

Research Objectives

The purpose of this study is to examine how climate-responsive school calendars can be used as strategic tools for enhancing environmental learning and climate literacy among students in Enugu East. The research aims to explore how school managers incorporate or fail to incorporate seasonal climate awareness into academic timetables, and to identify strategies that can promote climate consciousness and resilience through educational management practices.

1. To assess the extent to which current school calendars in Enugu East reflect seasonal and climate-based planning.
2. To examine how school managers incorporate environmental awareness into calendar design and school activities.
3. To identify adaptive strategies that can enhance climate literacy through school calendar reforms.

Research Questions

1. To what extent do current school calendars in Enugu East integrate seasonal and climate-related considerations?
2. How do school managers in Enugu East currently integrate environmental awareness into their academic scheduling?
3. What climate-responsive strategies can be adopted by school leaders to improve environmental learning through school calendar adjustments?

Literature Review

Climate Change and Education

Climate change is reshaping multiple sectors of human development, with education becoming one of its most impacted domains. With rising floods, heatwaves, droughts, and storms, schools are currently facing interruptions in their classes, damage to infrastructure, and psychosocial pressure on learners and staff. One of the most recent findings is that climate-induced disturbances have become one of the main challenges to education continuity according to the Intergovernmental Panel on Climate Change (IPCC, 2023), particularly in sub-Saharan Africa. These threats discriminate against the marginalized communities because their infrastructures are poor and systems of adaptation are in their early stages. Environmental instability has caused the frequent interruption of schooling due to floods in some states including Lagos, Bayelsa, and Anambra (Adelekan, 2021).

In addition to disturbances, climate change has long-term implications for education. Researchers who conducted a study involving the participants of the study namely Schreiber et al. (2022) discovered that contact with climate-related disasters like wildfires or floods lowered grades and student engagement. The reason is that climate calamities can cause trauma, displacement, and poverty which impact cognitive advancement and schooling. UNICEF (2022) also noted that children who live in conditions of constantly appearing climate threats are more likely to lose their access to school, especially in cases where households will have to flee the area or put survival versus education in the forefront. The long-term effects impose the necessity of educational managers to come up with systems that create a climate of resilience in schools.

The need to teach environmental education through learning systems has been sluggish as the systems take a long time to incorporate environmental education into their main framework. Even in most curricula, climate education is being taught as part of the natural sciences only and not embedded in all subjects. The Global Education Monitoring Report (UNESCO, 2021) states that currently, less than 40 percent of national education systems across the world have incorporated environmental sustainability into their core education aims. Nigeria, over the years, has made some progress in terms of science content, but nothing much has been done in terms of inculcating climate literacy in arts, management, or even school running (Nwankwo & Uche, 2022). This is an indication of a larger-scale systemic issue in considering education as a means of climate action.

Research has also shown the power of schools as climate-responsive institutions. Oladapo and Adebayo (2023) argue that when schools integrate climate themes into leadership, curriculum, and extracurricular activities, they create a new generation of environmentally responsible citizens. This integration requires not just policy updates, but practical, structural changes to the school environment and its daily operations. These may consist of school gardens, green clubs, waste recycling, schools programs, and climate-safe

infrastructure, which all boosts learning and adaptation. However, they must be accompanied by a climate-responsive academic calendar that is flexible. This necessitated a paradigm shift in the management of education. Climate change is not the problem but a new environment under which learning has to happen now. There is no more need to raise a problem of climate change in schools; it has become an ethical duty to fulfill that need (Shrum et al., 2022). Schools should be constructed and run to ensure that their occupants are safe while learning about the surroundings. This kind of strategy requires the entire reconstruction of school leadership, school infrastructure, school curriculum, and, most importantly, school schedules, defining the speed and scale of schooling.

Academic Calendar Flexibility and Environmental Learning

The academic calendar is one of the less well-researched mechanisms of introducing climate concern into schools. The majority of countries adhere to the conventional school year calendars based either on farming seasons or colonial patterns. But these structures are currently less and less in line with the modern environmental reality. The study by Arndt et al. (2021) shows that the academic calendar has to be more dynamic and sensitive to climate trends to be relevant in the 21st century. Strict calendars may be the cause of risks to learners in flood-affected and drought-affected regions, losses in school days, and impediments to learning continuity. Changes in the schedule of academics in Kenya have been used to adjust to the date according to the climate in the regions. To illustrate, during droughts and heat waves schools in arid and semi-arid regions postpone their opening, giving teaching during cooler months and setting up community-based environmental activities during holidays (Okaka & Otieno, 2023). Even Finland has now implemented so-called season project weeks following the ecological areas students can also participate in environmental regeneration, animal research, and sustainable agriculture (UNESCO, 2022). Such models indicate that there is no adverse impact of climate-informed calendar planning on academic performance; rather, it improves it by offering experiences to the community and achieving community relevance.

Environmental campaigns, awareness weeks, and nature excursions which are carried out only because of time constraints are also accommodated in flexible school calendars. The Green Schools Program introduced in California involving the ritual of the school calendar known as the Climate Action Days led to high student involvement in the planting of trees, waste audits, and the community climate workshop (Climate Action Network, 2022). Synthesis of these activities should be oriented through careful planning as school The planning is the essence of educational planning and not simply a logistical solution.

Notably, the calendar flexibility should be connected to the pedagogy and policy. According to Adetunji and Akinyemi (2023), flexible scheduling can be either illegitimate or not implemented without healthy management and governing systems in the country. In their research at Nigerian schools in the Middle Belt, they discovered that of the principals who were receptive to the idea of changing the date of terms or holidays to accommodate local climatic concerns, the principals had no sanction to do so at the school board or the ministry. This indicates the vicinity of embedding calendar reform in a greater education policy reform.

In addition, flexibility has to be fair. And as it is cautioned by Ojo and Sule (2024), there should be no calendar reforms that would offer urban schools more capital at the expense of rural schools, which lack the facilities to keep an eye on the weather. They present an opportunity to work on the creation of zonal climate adaptation principles according to which every area could adapt its academic schedule to the aspects of the climate and weather status in the local region. By doing so, school schedules may become strategic tools not only when it comes to safety but even environmental education and climate justice.

The Role of Educational Management in Climate Adaptation

Excellent quality of leadership and management in the schools is also critical to their ability to respond to climate change. Educational managers Educators principals, vice principal-heads, and headteachers are some of the primary movers in implementing the climate policy at the school level. Akinbobola and Ajayi (2021) in their turn claim that school leaders should elaborate strategic planning frameworks that help align the academic activities to the realities in the environment. This involves risk assessment of infrastructure, safety measures, and most importantly formulation of climate-sensitive academic calendars.

Educational management entails instruction and safety planning. Nwachukwu and Alabi (2023) observed in their research on the presence of climate-informed management plans in secondary schools in Lagos State that the more resilient schools to the effects of the flood event, the climate-informed management plans are in second-level schools in the state. These schools not only constructed physical obstacles and raised classrooms but also altered school schedules to have closures in times of highest precipitation and add teaching weeks when none occurred. Such a proactive style minimized interference and saved learning time, which is equally indicative of the managerial ability to see into the future.

Environmental values also come about through leadership. School heads create the atmosphere of whether climate issues are topics to be taken seriously and treated as an urgent one or considered irrelevant. Wals and Peters (2022) conclude that the teacher is more likely to integrate an environmental topic in their classes once the principal shows an inclusive attitude to a climate-literate approach. Therefore, the educational leadership has to be one of climate responsibility. The presence of policies is not sufficient, leaders should exercise them.

Educational management must also involve community engagement. Climate adaptation cannot succeed without local participation. A study in Enugu State by Madu and Eze (2022) found that schools which partnered with local environmental NGOs and parent-teacher associations were better able to implement outdoor learning activities and secure flexible calendar adjustments. This suggests that managerial success depends on networks and collaboration, not just policy documents. School managers must therefore act as coordinators of climate action, drawing together stakeholders to protect and empower learners.

Finally, monitoring and evaluation are essential. School leaders must use feedback from staff, parents, and students to continuously refine calendar structures and climate learning interventions. As highlighted by the Global Schools Forum (2023), schools should implement adaptive learning systems that review academic scheduling annually based on environmental data and educational outcomes. Such systems will allow school calendars to evolve with

climate realities—positioning educational management as a dynamic, responsive field in the face of climate change.

Research Method

The research design adopted for this study was a descriptive survey aimed at examining the usefulness of climate-responsive school calendars in supporting environmental education within the secondary school context. This design was selected because it enables the collection of quantitative data from a defined population using structured questionnaires. Owan and Agunwa (2022) affirm that the descriptive survey is appropriate when the objective is to determine opinions, perceptions, and attitudes of a target group on emerging educational issues. This approach offered an analytical framework for assessing how school administrators conceptualize and implement climate-adaptive strategies through academic scheduling.

The population of the study comprised school managers, including principals, vice-principals, and headteachers of secondary schools in Enugu East Local Government Area, Enugu State, Nigeria. The sample schools were selected using purposive sampling based on their operational capacity, geographic exposure to climate-related risks, and responsiveness to educational policy changes. These schools included St. Patrick Secondary School, Daughters of Divine Love Secondary School, St. Joseph Secondary School, Godfrey Okoye University Secondary School, and Lily Pinnacle School, New Haven.

Although the schools were purposively selected, the actual participants—30 school administrators—were identified through purposive sampling as well. This was to ensure that only those directly involved in academic planning, school calendar design, and educational coordination were included.

Data were collected using a structured questionnaire developed by the researchers and reviewed by experts in educational management and environmental studies to ensure content validity. The questionnaire was divided into three sections, each addressing one of the study's research questions. It employed a 4-point Likert scale with the response options: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). This allowed for quantifying the degree of agreement with various statements related to climate change, calendar responsiveness, and environmental education integration.

The instrument's reliability was established through a pilot test with five school administrators outside the selected schools. Cronbach's Alpha reliability coefficient yielded a score of 0.81, indicating high internal consistency.

Ethical clearance for this study was obtained from the Research and Innovation Committee, Faculty of Education, Godfrey Okoye University. All participants were briefed on the purpose and procedure of the research. Informed consent was obtained, and respondents were assured of anonymity, voluntary participation, and the confidentiality of their responses. No personal identifiers were used, and participants had the right to withdraw from the study at any time without penalty. The researchers personally administered the questionnaire to enhance response rates and minimize misinterpretation. Prior appointments were made with the school heads to ensure availability. Respondents were given approximately 30 minutes to complete the questionnaire, and responses were collected immediately afterward.

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Data were analyzed using mean and standard deviation. A cut-off mean score of 2.5 was adopted for decision-making. Items with mean scores of 2.5 and above were considered accepted, indicating general agreement among respondents, while those below 2.5 were rejected. All items scored above 2.5, with an average mean of 2.89, reflecting moderate consensus. Results were presented in tables and discussed in relation to the three research questions derived from the study's objectives.

Data Presentation and Analysis

Results and Discussion

Research Question 1: How do school managers perceive the impact of climate change on school operations and academic calendars?

Item No.	Statement	Mean ($\bar{x}$)	SD	Decision
1	Climate change has caused disruptions in the school calendar.	2.86	0.54	Accepted
2	Flooding and extreme heat have delayed school attendance and exams.	2.84	0.59	Accepted
3	School managers are overwhelmed by climate-related adjustments.	2.74	0.61	Accepted
4	Existing calendars are not responsive to seasonal hazards.	2.85	0.58	Accepted
5	There is insufficient policy support to address climate disruptions.	2.82	0.62	Accepted

Interpretation

Findings show a broad consensus among school managers that climate change significantly disrupts school operations. Respondents reported that extreme weather events delay academic activities, strain leadership capacities, and expose gaps in policy. These insights align with IPCC (2023) and Adelekan (2021) who observed that environmental volatility disproportionately affects education systems, particularly in low-resource settings. The high mean values indicate a shared awareness of the urgency for structural reform, particularly in timetabling and risk preparedness.

Research Question 2: What are school managers' views on the use of flexible school calendars as tools for environmental learning?

Item No.	Statement	Mean ($\bar{x}$)	SD	Decision
6	Flexible calendars can promote climate awareness among students.	2.87	0.56	Accepted
7	Adjusting the school year to avoid climate hazards is beneficial.	2.85	0.63	Accepted
8	Outdoor lessons during safe seasons support environmental learning.	2.89	0.52	Accepted
9	School calendar reform can strengthen experiential education.	2.78	0.60	Accepted
10	Students are more engaged during nature-based school programs.	2.81	0.55	Accepted

Interpretation

Respondents expressed strong agreement that flexible academic calendars can facilitate both climate safety and environmental education. This supports the work of Okaka and Otieno (2023) whose findings in Kenya showed that calendar adaptations allow schools to

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plan outdoor, nature-based activities, increasing student engagement and environmental literacy. Furthermore, the concept of experiential learning through climate-aligned scheduling reflects Anderson et al. (2021) who emphasized the importance of integrating climate themes across subjects and school operations, not only within science curricula.

Research Question 3: How can educational managers implement calendar reforms to promote sustainability within secondary education?

Item No.	Statement	Mean ($\bar{x}$)	SD	Decision
11	Schools should observe sustainability weeks to raise climate awareness.	2.84	0.61	Accepted
12	Teachers need training to deliver climate education through flexible terms.	2.85	0.59	Accepted
13	Community engagement is essential in implementing climate-responsive calendars.	2.76	0.65	Accepted
14	Educational managers should align calendars with local environmental data.	2.83	0.58	Accepted
15	Environmental clubs should help shape seasonal academic schedules.	2.72	0.60	Accepted

Interpretation

School managers endorsed the idea that implementing calendar reforms for sustainability requires a combination of teacher training, community involvement, and data-driven planning. This aligns with Adetunji and Akinyemi (2023) who emphasized the necessity of integrating environmental data into school timetables to ensure local relevance. Additionally, the role of environmental clubs and community partnerships reinforces the findings of Madu and Eze (2022) who found that collaborative action at the school level improves both climate resilience and student participation.

Conclusion

This study examined how educational management can utilize school calendars as strategic tools for promoting environmental learning and climate change education in secondary schools. The findings revealed that school managers in Enugu East Local Government Area recognize the increasing disruption caused by climate-related hazards such as floods and heatwaves. Respondents agreed that the current school calendar system, rooted in colonial and agrarian patterns, lacks the responsiveness needed to address seasonal climate risks.

There was strong support among respondents for a more flexible academic calendar that aligns with environmental realities. Such flexibility is not merely a scheduling adjustment but a pedagogical opportunity to integrate climate education into the rhythms of the school year. However, adoption remains limited due to gaps in teacher training, weak policy direction, and inadequate collaboration with local communities and environmental stakeholders.

The study concludes that climate-responsive calendars are a promising and underutilized mechanism for embedding climate literacy into school culture. By aligning academic activities with

seasonal patterns and ecological contexts, schools can simultaneously enhance safety, foster environmental stewardship, and support experiential learning. With the right policy support, professional development, and community partnerships, schools can evolve into resilient and adaptive spaces that prepare learners to thrive in a changing climate.

Educational Implications

There are several implications that this research may have on educational stakeholders most especially school management in Nigeria in regards to climate change and climate change. To begin with, school calendars should not be viewed only as managerial mechanisms but as educational models that could be used to promote climate education and the safety of students. Such tactical interventions as the inclusion of climate awareness in the academic timetable (sustainability weeks, nature-based learning, adjustments of terms), can render education more dynamic and close to what students experience in real life.

Second, climate literacy and flexible pedagogy should be taught to the teachers as a form of professional development. The teacher training colleges and educational management institutions must revise their curriculum, because environmental responsiveness is an issue of urgency. Otherwise, the school leaders might be in a position of being conceptually aware of reforms but practically ineligible to lead it.

Third, community and stakeholder engagement are essential for successful implementation. Schools cannot adapt alone; they must collaborate with local environmental bodies, parent associations, and government agencies to secure the data, legitimacy, and resources required for calendar innovation. Policy frameworks must therefore decentralize school calendar authority to empower localized decision-making, especially in regions frequently affected by environmental hazards.

Recommendations

1. **Policy Reform for Calendar Flexibility**

Ministries of Education should update academic regulations to authorize school heads to modify term dates in response to local climate data. This includes formalizing flexible calendar policies through regional education boards and incorporating climate risk assessments into calendar planning protocols.

2. **Institutionalize Climate Education Periods**

Schools should implement structured sustainability weeks or environmental learning intervals within the academic calendar. These should align with periods of relative climate stability and feature hands-on activities such as afforestation projects, water conservation campaigns, and real-time weather monitoring exercises.

3. **Capacity Building for School Leaders and Teachers**

Develop targeted professional development programs on climate-responsive educational management. These programs should train school leaders on how to align scheduling with seasonal risks and equip teachers with interdisciplinary tools to deliver climate education within flexible timetables.

4. **Strengthen School Community Agency Collaboration**

Establish formal partnerships between schools, environmental NGOs, meteorological agencies, and local authorities. Such collaborations should support the co-creation of localized environmental data dashboards, climate early warning systems, and community-based adaptation plans that inform school calendar revisions.

5. **Integrate Climate Literacy Across the Curriculum**

Redesign curricula to embed climate themes across all subjects including literature, civic education, and social studies not just the natural sciences.

Curriculum developers should align content delivery with flexible academic calendars to ensure that climate education is experiential, contextual, and continuous.

6. Science education. A cross-curricular approach supported by flexible timetabling will promote holistic climate awareness and civic responsibility.

References

Adetunji, M. O., & Akinyemi, T. B. (2023). Climate-smart school time management for learner resilience in African education. International Journal of Educational Leadership and Management, 11(2), 102–117.

Adelekan, I. O. (2021). Climate change and urban flooding in Nigerian cities: The case of Lagos. Environment and Urbanization, 33(1), 45–64. https://doi.org/10.1177/0956247820987324

Akinbobola, A. O., & Ajayi, T. M. (2021). Strategic educational management for climate risk adaptation in Nigerian secondary schools. Journal of Educational Management and Policy, 25(4), 133–150.

Anderson, M., Brown, K., & Lewis, J. (2021). Education for sustainability across the curriculum: Principles and practices. Routledge.

Arndt, C., Fantom, N., & Simmons, C. (2021). Flexible academic calendars in a changing climate: Lessons from Africa and Asia. Journal of Climate and Education Policy, 5(1), 22–39.

Bangay, C. (2021). Learning for resilience: The role of school management in climate-responsive education. International Review of Education, 67(4), 543–562. https://doi.org/10.1007/s11159-021-09900-2

Climate Action Network. (2022). Climate Action Days and school engagement: A case study from California green schools. https://www.climateactionnetwork.org/reports

FAO & UNICEF. (2023). Education and climate resilience in sub-Saharan Africa: A policy review. Food and Agriculture Organization and United Nations Children's Fund. https://www.fao.org/publications

Global Schools Forum. (2023). Annual report: Innovations in school leadership for climate adaptation. https://www.globalschoolsforum.org

Intergovernmental Panel on Climate Change (IPCC). (2023). AR6 synthesis report: Climate change 2023. https://www.ipcc.ch/report/ar6/syr

Madu, O., & Eze, C. (2022). Community-school partnerships for climate-responsive learning

in Enugu State, Nigeria. African Journal of Environmental Education, 18(2), 67–83.

Nwachukwu, M. I., & Alabi, J. S. (2023). Climate-informed school management plans: Lessons from Lagos secondary schools. Nigerian Journal of School Leadership, 8(1), 55–70.

Nwankwo, R., & Uche, P. (2022). Climate change education in Nigeria: Gaps in curriculum integration. Journal of Environmental and Science Education in Africa, 10(3), 112–125.

Okaka, W., & Otieno, M. (2023). Climate-responsive academic calendars and student engagement in Kenya. East African Journal of Education and Social Sciences, 4(1), 30–42.

Ojo, K. A., & Sule, M. A. (2024). Climate justice and rural schooling: Equity concerns in flexible calendar reforms. Journal of African Educational Research, 12(1), 88–101.

Oladapo, A., & Adebayo, R. (2023). Eco-inclusive leadership and school climate adaptation strategies in Nigeria. African Review of Education, 7(2), 91–108.

Ogunyemi, B. (2022). Flooding and the academic calendar: A study of secondary schools in Enugu State. Nigerian Journal of Educational Planning, 14(1), 24–37.

Owan, V. J., & Agunwa, D. I. (2022). Survey research in education: Methodological principles and practices. Journal of Education Research and Evaluation, 9(3), 145–159.

Schreiber, M., Hall, C., & Jameson, L. (2022). The hidden costs of climate trauma on student learning outcomes. Environmental Education Research, 28(6), 793–810.

Shrum, W., Dupré, A., & Sanga, G. (2022). Climate change and school ethics: Reimagining responsibility in the Anthropocene. Palgrave Macmillan.

UNESCO. (2021). Global Education Monitoring Report 2021: Non-state actors in education. United Nations Educational, Scientific and Cultural Organization. https://www.unesco.org/gem-report

UNESCO. (2022). Education for climate action: Schools shaping the future. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000381592

UNICEF. (2022). Climate crisis is a child rights crisis: Introducing the Children's Climate Risk Index. United Nations Children's Fund. https://www.unicef.org/reports/climate-crisis-child-rights-crisis

Wals, A. E. J., & Peters, M. A. (2022). Environmental education in times of climate disruption: The role of school leadership. Educational Philosophy and Theory, 54(6), 789–803.