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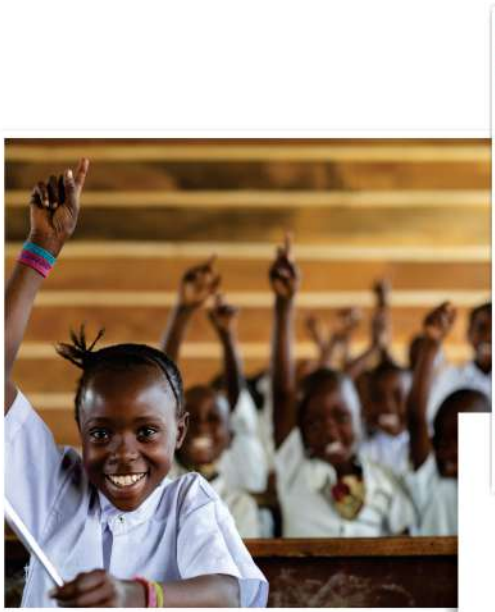
INNOVATIVE STRATEGIES FOR TEACHING VOCATIONAL, SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION: CLASSROOM PRACTICES



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PREFACE

The electronic book (e-book) acknowledges that traditional methods in Vocational, Science, Technology and Mathematics Education: Classroom Practices may not be sufficient to equip students with the necessary skills for a rapidly evolving technological landscape.

Therefore, it advocates for the adoption of Innovative teaching approaches that promote a more dynamic and effective learning experience.

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TABLE OF CONTENT

FOREWORD

This book entitled "**Innovative Strategies for Teaching Vocational, Science, Technology and Mathematics Education: Classroom Practices",** is a book of readings on various innovative classroom pedagogies. It is a welcome literature for Education System and a very important resource book for teachers who are functioning in the disciplines of Vocational Education, Science, Mathematics and Technology education and training. It is a compendium of most of the **active learning strategies** aimed at producing graduates who have been prepared for adaptation to the conditions of the 21st century world of fluidity. The 21st century world accommodates soft skills which the individual can edit from time to time as the conditions of socio-cultural, economic and technological environments change constantly and uncontrollably. A century in which cross-border job openings are important means of employment, a century where attitude is more important than subject-based excellence, a century where collaboration, innovation and creativity are irreducible demands by employers of labour, a century where adaptive skills are critical for entrepreneurship, creation of jobs and wealth.

All categories of teachers at all levels of education would find this resource book interesting and professionally helpful for their teaching practice. Because conditions of the modern world are in perpetual flux, teachers have to re-skill in order to produce adaptive graduates and the era of lecture method is literally over. It is these modern innovative instructional strategies that would enable teachers to produce such graduates who would survive and then succeed in the 21st century global economy.

This book would also be very useful to researchers and innovators in the envisioned pedagogic paradigm shift of this era. I therefore, proudly recommend this book, a compendium on innovative pedagogies to all classes of teachers and researchers on pedagogies and curriculum reforms in the modern era.

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DEDICATION

This book is dedicated to educators in the world

CHAPTER 5

ROLE OF SMART GREEN SCHOOLS IN THE DEVELOPMENT OF ENVIRONMENTAL EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

Regina Ijeamasi Enebechi

Abstract

The global environmental crisis and the urgent need for sustainable development have underscored the importance of integrating environmental education and education for sustainable development into formal learning systems. Smart green schools are educational institutions designed and equipped with eco-friendly infrastructure, sustainable practices and digital technologies with the aim of advancing environmental education and education for sustainable development among others. Smart green schools serve as educational spaces and practical models of sustainability, fostering students' environmental literacy, critical thinking, and responsible citizenship. By incorporating green building principles, renewable energy use, waste reduction strategies, and digital tools for interactive learning, these schools provide experiential learning opportunities that reinforce sustainable values and behaviors. The paper assessed the impact of smart green school initiatives on the environmental literacy developed amongst students. It determined the particular features of smart green school surroundings that aid in the achievement of environmental education and education for sustainable development. It also explored the challenges that schools encounter in adopting smart green and sustainable policies and articulated strategies for the improvement of smart green school frameworks into the national education system for the sustainability development goals. Findings indicate that smart green schools significantly enhanced the effectiveness of environmental education, promote sustainability competencies, and prepare learners to actively contribute to a more sustainable future. The study recommends that governments and stakeholders should increase the budgetary allocation for the establishment and operation of green school projects, provide incentives for schools adopting smart green practices, adopt green building designs like energy-efficient lighting, solar panels and water recycling systems, incorporate smart technologies like digital monitoring for energy use to create a hands-on learning environment and provide trainings for teachers to equip them with the relevant knowledge and pedagogical skills needed to teach environmental education and education for sustainable development effectively in smart green environments.

Keywords: Smart green schools, Development, Environmental Education, Sustainable development

Introduction

In his desire to better his life and living conditions, man from immemorial, has explored and exploited the great resources of nature and in the process has transformed the natural environment into the built environment and left his environment polluted. Put in another way, right from time, man has explored and exploited the great resources of nature for his benefit with the assumption that such resources are abundant and inexhaustible. Thus, from his environment man got the food he eats, water he drinks, materials for his shelter and clothing and raw materials for his industries. Unfortunately, man has not exploited these resources in a sustainable manner. Man's activities have led to wastages and pollution on the surface of the earth.

Green School

Schools are predominantly used by young people. The school environment is therefore an environment for the formation of their young minds. Furthermore, physical environment of a school plays an important role in the health, wellbeing and learning outcomes of the learners.

Energy use in school buildings has assumed a new dimension due mainly to advent of technology-based education which makes teaching and learning fully dependent on steady, reliable and affordable energy supply. Secondly, emergence of COVID-19 has accelerated the requirement for technology-based online education due to physical distance restrictions. Schools are now emerging as centres for sustainability with the realization that the education sector holds the key to a sustainable future (Ezema, Nwosisi, Uwuigbe & Ogheneovo, 2022)

Nur, Ramli, Mohd, Taib and Norhazarina (2012) defines Green Schools as the results of the planning, designing, and construction process that takes into account a building's performance over its entire 50 to 60-year live cycle with a focus on creating an environment that is optimal for learning. Green Schools create this optimal environment by providing fresh air, a comfortable temperature range, with plenty of natural lighting, and minimizes distractions from nearby noises "while also maximizing resource efficiency, minimizing pollution, and teaching students the importance of innovation in the built environment.

Green schools movement developed following the environmental concerns expressed at the United Nations Conference on Environment and Development UNCED 1992 (Ezema *et al*. (2022). The idea behind green schools is to engender a healthy environment that is conducive to learning and at the same time save energy, resources and mitigate carbon emissions. Green schools were therefore, established to a culture among the younger generation whereby school buildings and the overall school environment are responsive to environmental sustainability.

Globally, there has been a growing trend in Green School research. However, much of the research has centred on the building components and energy conservation, little consideration has been given to how the building features are applied to teach students about sustainability. A basic requirement for a Green School is that the building must teach about sustainability. A green school has been described as school building or facility that creates a healthy environment that is conducive to learning as well as saves energy, resources and money (Nur *et al*. (2012).

According to Nur *et al*. (2012), green schools differ considerably from conventional schools in that they conserve energy and natural resources, improve indoor air quality, remove toxic materials from places where children learn and play, employ day lighting strategies and improve classroom acoustics, decrease the burden on municipal water and wastewater treatment, encourage waste management efforts to benefit the local community and region, conserve fresh drinking water and help manage storm water runoff, encourage recycling, promote habitats protection and reduce the demand on local landfill.

Environmental Education

In recent times, there is a growing awareness globally on the alarming rate of the destruction of environment and its potential threats to human and other living things as well as on human socio-economical activities. Efforts are on top gear to avoid or minimize future environmental damage. One of those endeavours is environmental education for young and older generations. (Adi Suryani, Soedarso, Moh. Saifulloh , Zainul Muhibbin , Wahyuddin, Tony Hanoraga, Muchammad Nurif, Umi Trisyanti, Lienggar Rahadiantino and Deti Rahmawati (2019). Education is the backbone of development (Adi *et al.*, (2019). Education prepares human resources for being active development participants. Moreover, it provides quality human capital asset. Training our growing children on environmental knowledge, protection skills and management as well as caring and responsible character is a sure solution to the myriad of environmental issues ravaging the planet earth

According to Díaz-Parra, Fuentes-Penna, Barrera-Cámara, Trejo-Macotela, Ramos-Fernández, Ruiz-Vanoye, Alberto Ochoa Zezzatti and Rodríguez (2023) the earth we inhabit is under serious threat today as various species of Flora and Fauna are on the brink of total extinction. The three environmental media: the air, the water and the land are all affected as the air we breathe, the water we drink, the food we eat is polluted or contaminated.

Environmental Education is that aspect of education that teaches people to explore all the problems related to the environment and the most feasible ways to protect and preserve it. Environmental education imparts knowledge about the current situation and future prospects of nature.

Merits of Environmental education

1. **Creates Awareness**: environmental education creates the awareness in the minds of the upcoming generation on the need to take necessary steps to protect our environment. This awareness will enable them appreciate the issues the world is facing today, the various species of plants and animals, especially those under the threat of total extinction, how their long term survival can be ensured and what the issue of sustainability is and how it can be achieved. In a nutshell, environmental education raises awareness of issues impacting the environment upon which we all live and depend on and spells out actions we can take to improve and sustain it. It enables us to connect to the world around us and enlightens us on both natural and built environments.
2. **Engenders Sustainability:** at the rate natural resources are being consumed today, those resources will be depleted far too fast for future generations to survive. In other word, our irresponsible usage of natural resources will leave our future generations to bear with the consequences of this exploitation. This is all about sustainability which is the practice of making sure that the needs of future generation are met by the earth's resources by ensuring a viable form of consumption of those resources today. Environmental education taught in Eco-schools enable people understand the repercussions caused by over exploitation and to act accordingly
3. **Health Benefits:** *Eco-therapy is the term used in describing treatment through natural means. Students and teachers in green schools* experience serenity and the healing powers of nature. This therapy helps patients recover from depression, cures heart ailments, maintains blood pressure, cures sleep disorder, increases longevity and improves eyesight. It is an established fact *that the closer we are to nature, the healthier we are.*
4. **Deeper Understanding of the environment:** Environmental education not only allows individuals to explore environmental issues, but also to engage in problem solving, and also to take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and acquire the skills to make informed and responsible decisions
5. **Ability to take informed decisions about the environment**: Through environmental education, young people are taught to question, analyze, and evaluate environmental information and arguments. They thus acquire the skills on how to gather and analyze data, examine different perspectives, and make informed decisions about environmental issues.
6. **Acquire Environmental Values:** Through environmental education, man acquires the ability to respect, care for and have compassion for ourselves, others and our environment and to take responsibility for our actions. Environmental education teaches individuals to acknowledge the importance of all life on earth and to have an Understanding and inclusion of all peoples and perspectives.
7. **Renewable sources of Energy:** Green schools through environmental education enables people appreciate the importance of renewable energy and the dangers inherent in the use of non-renewable sources of energy like petrol, diesel and coal which are the major sources of the world's pollution. Environmental education encourages the use of renewable sources like solar energy and wind energy. By so doing, environmental education supports the fight against global warming and climate change.

Sustainability

Sustainability is at the root of existence as it is associated with every aspect of human life. It is a concept which refers to a development model that emphasizes resource conservation, resource efficiency and environmental impact mitigation (Ezeam *et al.* (2022). Ezema *et al.* (2022) also stated that the built environment is very critical to the achievement of holistic sustainability. The built environment consists of anthropogenic activities such as buildings, structures, features and

facilities meant for work and habitation. It impacts on the environment through resource use, energy use and their associated carbon emissions. To bring about a sustainable environment for the present generation and future generations, there is the need to adopt green transformation in all spheres of life in the society including education (Subhasree Pal, Souren Bhattacharya, Subhranil Mustafi and Shankar Prasad Mitra (2023).

The built environment has a profound impact on the sustainability of the environment when considered in terms of carbon emissions, resource use, energy consumption and overall environmental impact. Generally, the built environment is considered to be a high consumer of resources. It accounts for up to 50 per cent of global materials resources, 50 per cent of energy resources, 40 per cent of global water use, 60 per cent of prime land and 70 per cent of global timber use (Ezema et al. (2022). Ezema et al. (2022) also stated that the built environment is responsible for 38% of global greenhouse gas (GHG) emissions 28% of which is directly accounted for by energy use in buildings while 10% is traceable to materials for building construction and maintenance. Furthermore, it has been determined that about 55% of global electricity consumption is associated with building operations. Ezema et al. (2022) concluded that energy use in buildings is very critical for overall sustainability of the built environment.

Generally, buildings significantly impact the environment either as embodied impacts or operational impacts. The operational impact accounts for over three quarters of the total built environment impact (Ezema et al. (2022). Most of the operational impacts come from energy use; hence, the adoption of low impact energy will greatly reduce the environmental impact of buildings due to energy use. This explains why calls for the adoption of green, clean or sustainable energy is on the increase

To minimize the impact of energy use, the adoption of renewable energy, otherwise known as clean energy or green energy has been advocated. Clean energy options are always preferable in order to harness energy and maintain a sustainable environment.

In schools, energy consumption is usually a large cost item in the school budget. Therefore, reducing the energy consumption in schools makes a lot of economic sense.

Statement of the Problem

Globally, there is a growing awareness of environmental challenges such as climate change, biodiversity loss as a result of desertification, flooding and gully erosion and pollution. These not-withstanding, many educational systems, particularly those in developing nations have not succeeded in integrating effective environmental education and education for sustainable development into school curricula. They still run traditional schools which often lack the infrastructure, resources, and pedagogical approaches needed to foster environmental consciousness and sustainable practices among students. Smart green schools on the other hand combine environmentally sustainable infrastructure with smart technologies and innovative teaching methods which have emerged as potential catalysts for transforming how environmental education is delivered.

However, the actual role and impact of smart green schools in promoting environmental education and education for sustainable development have not been properly researched and documented especially in the context of developing countries where educational innovation may not be in tandem with environmental priorities.

Purpose of the Study

This study seeks to assess the impact that smart green schools have on the growth and improvement of environmental education and education for sustainable development. More precisely, the study intends to;

1. Determine the particular features of smart green school surroundings that aid in the achievement of environment education and education for sustainable development
2. Explore the challenges that schools encounter in adopting smart green and sustainable policies.
3. Articulate strategies for the improvement of smart green school frameworks into the national education system for the sustainability development goals.

Objectives of Green Schools

Green schools are created with the following objectives in mind

1. The need to achieve sustainability in both school buildings and school environments.
2. The need to use the green school buildings and environments to mold the young ones as for the future leaders of tomorrow

A key component of the United Nations' Sustainable Development Goals (SDGs) is the provision of an inclusive and quality education for the citizenry (Ezema, Nwosisi, Uwuigbe, and Ogheneovo, (2022). According to Ezema et al. (2022), technology-based education is best suited for achieving the purpose. It is a well-known fact that energy is fundamental to the modern school system. This is so because energy is required to power Information and Communication Technology (ICT) equipment needed as bedrock for technology-based education.

As a matter of fact, green schools came into being as a response to the need for school buildings and the overall school environment to be responsive to the environment and to act as veritable locations for the inculcation of sustainability ideas in the younger generation who are the leaders of tomorrow (Gough *et al* 2020)

According to Ezema *et al*. (2022), the establishments of green schools are due to two main reasons. First is the need for sustainable school buildings and school environments. Second is the need to use the sustainable school buildings and environments as tools for the future generation of leaders. According to Ezema et al. *(2022),* green school are created to achieve the following objectives:

1. To reduce the environmental impact and footprint of school buildings.
2. To reduce the running cost of school buildings especially in the area of energy consumption and maintenance of school facilities
3. To enable student who are leaders of tomorrow develop requisite knowledge and skills to deal with current and future environmental challenges.
4. To help in creating a healthy and conducive school environment for teaching and learning.

Generally, green schools focus on several areas with emphasis on engendering a holistic and positive impact on the environment, with special interest on environmental integrity and sustainability education. Different smart green schools focus on diverse areas of interest. However, according to Ezema *et al*., (2022) those interests usually fall into such sustainability areas as:

1. Sustainable energy
2. Water conservation
3. Biodiversity conservation
4. Sustainability education
5. Green infrastructure
6. Sustainable waste management
7. Healthy Indoor and Outdoor Environment

Features of Smart Green Schools

The physical environment of a school is a crucial factor in shaping the educational experience of students. By understanding and improving the spaces where students learn, educators and policymakers can make a profound impact on the quality and equity of education. While disparities in school facilities remain a significant challenge, creative and community-driven solutions can help bridge the gap and ensure that all students have access to a supportive and enriching learning environment.

Lighting and Color Psychology
Lighting is a critical component of a conducive learning environment. Natural light is the most beneficial for maintaining students' every day rhythms and keeping them alert. Furthermore, the colors used within classrooms can influence students' psychological and physiological states, potentially affecting their engagement and learning retention.

Classroom Designs
The design principles classrooms in smart green schools is hinged on naturalness, individualization and stimulation (Barrett et al., (2019)

The Design Principle of Naturalness for Smart Green Schools

- Lighting: There should be abundant daylight, but a low risk of glare. Good quality electric lighting should also complement daylight.
- **Temperature:** The classroom temperatures should neither be hot or cold. Heat from the sun should be controlled through the orientation of the classroom or physical shading.
- **Air Quality:** It is quite usual to provide large window openings to ensure adequate ventilation in the classrooms. The classrooms should also be large enough to dissipate poor air. Air conditioners should be provided where necessary.
- **Acoustics:** The floors of the classrooms should be carpeted and there should be no source of external noise.
- **Links to Nature:** The classrooms should have direct access to and use of outdoor learning spaces. There should also be natural materials in the classrooms such as furniture coverings and flower pots. The next feature of the classroom

Design Principle of Individualization
Ownership: To foster a sense of ownership among students, there should be distinct design characteristics and personalized displays and high quality desks and chairs.

- **Flexibility:** There should be different areas for older students. There should be well-defined learning zones that define age-appropriate learning options.
- **Connection:** Where possible, there should be wide corridors with external views with circulation spaces large enough for use for education activities

Design Principle of stimulation

- **Visual Complexity:** Visual variety in the classroom layout, ceiling and displays should be balance with the displays to create an orderly interest.
- **Colours:** There should be colour variations in the walls so as to produce an optimal level of stimulation. Bright colours on furniture and on displays accentuate the overall environment.

Outside of the Classroom
Adequate outdoor spaces should be provided for organized physical education and sports, as well as for play during break times. Physical activity and recreation have a significant impact on child development and the physical and mental health of learners (Barrett, Yufon, Joanne, Kharry, 2019). Spaces that are safe and healthy have been found to positively affect pupil's academic outcomes (Barrett *et al*., 2019).

The physical environment has the potential to dramatically change the students' perception of learning. This is so because the physical environment communicates who and what is valued in learning. It determines the expectations for a learning-centered environment including what is on the walls. Our physical environment, the seating arrangement for example, serves a purpose and has the power to communicate that we are all collaborators and are working together to construct knowledge and deep understanding (Isidore, Henry, Curtis & Ogheneovo, 2022). It is quite

observable that the atmosphere of a room can affect one's mood and productivity. This is especially true in educational settings, where the physical environment can significantly influence students' ability to learn and teachers' ability to teach (Coyle 2020). The physical space of a school is not merely a backdrop for education; it's an active participant in the learning process.

Studies have shown that the quality of physical infrastructure in schools, including lighting, acoustics, and classroom design, can affect students' concentration, behavior, and academic performance. A well-lit room with natural light can boost mood and energy levels, while poor acoustics can hinder communication and focus.

Creating optimal learning spaces can enhance both teaching and learning. Collaboration and innovation are at the heart of it all and as such, the classroom set-up matters. In such an environment, there is a place for every student including the student who needs a quiet work space to learn.

Physical spaces can promote learning in various ways, for example, through layout, overall classroom design and furniture design, lighting and technology. Some items such as music or elements from nature and teaching aids are also relevant

Physical environment is related to teachers' *levels of absenteeism, effort, effectiveness in the classroom, morale, and job satisfaction.* Physical environments can influence feelings of safety, security, and comfort. On the other hand, it may contribute to feelings of irritation, anxiety, sadness, and insecurity. To ensure a positive effect on learning, therefore, a quality school environment requires attention to aspects such as location, building materials, classroom size, furniture, lighting, temperature, ventilation, noise level, sanitation, air quality and the integration of ancillary equipment.

Classroom layout and its impact on interaction

The physical layout of a classroom can facilitate or impede interaction between students and teachers. Traditional row seating may limit collaboration, while circular or group desk arrangements can promote discussion and teamwork. The flexibility to reconfigure spaces for different activities is also important for accommodating varied learning styles and teaching methods.

Role of Smart Green Schools in Environmental Education for Sustainable Development

Green schools has not yet taken its foothold in Nigeria, but generally, the green schools movement in advanced counties, to greater and lesser extents, is contributing to children's understanding of and participation in sustainability related issues.

Eco-schools have encouraged inter-generational learning transfer, re-evaluation of lifestyles and resource usage, and changes home behaviours among the younger generation.

Sustainable schools programmes offer an educational platform that can support student learning while cutting costs and reducing waste. In Sweden, for instance, students are taking private eco-actions such as becoming vegetarians

The Eco-Schools Indian Ocean program highlights inter-country collaboration that is now spreading even wider with the creation of the Eco-Schools African Network

In Kenya, the Eco-Schools programme manager, KOEE, played a notable role in developing the official Kenyan ESD Strategy, advocating for mainstreaming ESD in the school curriculum and for Eco-Schools as best practice in the Strategy, and for the integration of environmental concerns into national development education action plans. (Flore, 2023).

The East African Community used some of the experiences of the Eco-Schools program in Kenya in drafting their ESD policy

In many countries that are already implementing the green schools project, there are evidence of organizational changes in schools and in development of more sustainable practices such as waste, energy and water use, more sustainability content in the curriculum, and improvements to the physical surroundings of the school.

In some other countries such as South Africa, Eco-Schools engage students in relevant livelihood activities such as rainwater harvesting and food gardening, as well as motivate them to do better at scholastic tasks like reading, suggest that the programme contributes to a variety of learning outcomes relevant to livelihoods outside and inside the formal economy.

In the United States of America, the greening of schools has reduced environmental impact and costs and provided effective environmental and sustainability education (Noel, 2019)

Green schools improve the health and wellness of schools, students, and staff.

In smart green schools, students are provided with the opportunity to acquire generic skills such as collaboration skills and communication skills in science-technology-engineering-mathematics STEM curriculum to develop science process skills, problem-solving skills and self-learning skills. (Huang *et al* 2020)

Smart green schools promote aesthetic education of visual arts and information technology to inculcate in the students the culture for treasuring the beauty of nature in a sustainable environment through e-learning activities.

The role of physical school environment on student health and education is becoming better understood. A growing body of literature indicates that improved physical environments in schools (e.g., indoor air quality, lighting, and acoustic conditions) can enhance student health outcomes. In parallel, the green building movement centers around designing buildings, including schools, that are more sustainable to decrease energy consumption, minimize environmental impact, and create healthier spaces for occupants.

Challenges to the Implementation of Smart Green Schools

The implementation of the smart green schools is faced with a number of challenges:

From the economic view point, the cost of establishing smart green schools or upgrading and adapting existing conventional schools into the new model schools in many countries of the world is high. In the face of the huge investment involved, this coupled with fact that the economic benefits may be unclear people are naturally fearful of changes and as such there is bound to be reluctance by stakeholders to accept the smart green school model. The establishment of smart green schools may pose the threat of redundancy and loss of jobs to automatic processes and IT-controlled processes for certain categories of workers.

Also, there may be increased risk of gender inequalities in professions which jobs are more likely to be replaced by Artificial intelligence (AI).

Presently, in many developing countries, in particular, there is lack of regulation, standards and forms of certifications for smart green schools. This poses yet another challenge. Again, there is also the problem of data security in the operations of smart green schools.

There is also lack of adequate skilled manpower to expedite the transition towards smart green schools. Qualified employees are insufficient and there is low level of commitment by top management.

Certain impediments have been recognized as militating against the speedy adoption of green schools in a developing country such as Nigeria. According to Ezema *et al*., (2022), such barriers are:

1. High initial cost of installation,
2. Availability of technical expertise,
3. Low level of awareness,
4. Absence of government policies and incentives, and
5. Availability of green energy components.
6. Inadequate water for regular cleaning of the toilets, hand washing and cleaning the dusty temporary classrooms, and a continuous supply of soap and towels

Furthermore, teachers need more capacity building, there is a need for more funding and human resources, Green issues need to be integrated into school co-curricular activities.

Conclusion

It is evident that most of the green schools' projects are mostly advocacy and education programmes aimed at inculcation in the younger generation the positive aspects of the environment. Not many of the green schools are green in terms of energy use. The good news, however, is that, many schools are gradually embracing the green philosophy as a way of contributing to a sustainable school system. It is important that these schools not only adopt green energy use, but will also integrate other aspects of greening the environment for increased sustainability.

The challenges of adoption of green energy are manifold and can be a major barrier to adoption. The initial cost is very high and can discourage many people. In addition, maintenance of the installation especially with respect to battery replacement can render the whole installation uneconomical.

Suggestions for Improvement

It has been established from the fore-going that the establishment and smooth operation of Smart Green Schools have been bedeviled by a myriad of challenges. The following suggestions aimed at improving the establishment and effective and efficient running of Smart Green School have been put forward.

1. **Funding and Resource Allocation:** Governments and stakeholders should increase the budgetary allocation for the establishment and operation of green school projects and provide incentives for schools adopting smart green practices.
2. **Infrastructure Enhancement:** There should be improvement in the provision of infrastructures and facilities which are required by the Smart Green Schools. These include the adoption of green building designs like energy-efficient lighting, solar panels and water recycling systems. They should also incorporate smart technologies like digital monitoring for energy use to create a hands-on learning environment.
3. **Teacher Training and Capacity Building:** Government should engage more teachers and instructors who are knowledgeable in science, technical and environmental education and ensure that they get regular hands-on training in their chosen fields to equip them with the relevant knowledge and pedagogical skills needed to teach environmental education and education for sustainable development effectively in smart green environments.
4. **Policy Integration:** Government should provide enabling laws and policy framework for the effective development of smart green schools and environmental education so as to ensure sustainable development. Governments should formally integrate smart green school frameworks into national education policies and curricula, ensuring that environmental sustainability become a core educational objective.

5. **Use of Clean Energy:** Government should encourage the use of clean energy such as solar powered energy source and avoid energy sources that contaminate the environment such as burning of fossil fuels.
6. **Curriculum Reform:** The curriculum for the smart green schools should be updated to include practical, interdisciplinary, and locally relevant environmental topics, emphasizing critical thinking, problem-solving and real-world sustainability challenges.

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