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# A GREEN SCHOOL MOVEMENT: A MARCH TOWARDS SUSTAINABLE DEVELOPMENT

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## *Abstract*

*The educational and economical aspects contribute to the core features of green study practices. It includes creating school climate that co-existed with nature, resource conservation, energy conservation, recycling, minimized waste and creating pleasant ambience for Teaching-Learning and application of green school practices as a teaching-learning resource. The amalgamation of green school practices in school curriculum and experiential learning activities is important. Teachers use observation, explore, practices, experiment and problem solving approach in assessment. Purposive sampling method is employed to draw the sample. Study is conducted in Green School Project awardees' school in the academic year 2019-20. Data is collected by using questionnaire, interview and field study. Result of the study reveals that 90% percent teacher (n=18) integrated green school practices in school curriculum. The 80% teachers conduct Green School Practices in a significant, effective and efficient way in creating awareness among school students.*

***Keywords:*** Environment, Biodiversity, Recycling waste, Water, Energy, Sustainable Development.

## Introduction

In the lives of students the environment of the school plays a significant role. Green school practices aims to develop environmental awareness and to support environment management and sustainable developmental education. Green School Practices is based on interdisciplinary principle, comprehensive, systematic approach, future oriented, relate local environmental problems to global environmental issues combining cognitive, affective and aesthetic aspects.

Students' performance in natural science subjects such as science, biology is significant and not much satisfactory. The root cause hindering good performance in these subjects confirmed and required to provide adequate resource and learning resources and teachers implementing innovative teaching approach. Green school practices make more and effective environmental related teaching-learning resources integrated in school curriculum, able to enhance environmental awareness among school students. The green school practices are creating environmental awareness and action on intrinsic part of life. It also serves as learning resources that enhance the awareness and sustainable development issues through integration of school curriculum.

The school environment, encourage and support students capacities in green environment. Green School Practices allow students to connect with their surroundings and attend to their health, safety needs, motivate students to learn, imbibe sense of belongingness, sensitivity towards school, environment, society and planet. Education is the key element to achieve sustainability. Education integrate practices, values, principles to motivate behavior that will create more sustainable future, environmental integrity, environmental viability and social justices to future generation. Green School Practices goes beyond formal school curriculum to be holistic, where students learning are not confined to class room. They link real life and activities to learning which benefits application of knowledge, skills in real situation. Such education require school leadership that take place sustainably at heart, school policy, practices, planning, encourages democratic and participatory decision making process.

Green school practices are guided by principles of environmental sustainability. It creates a conductive environment to fully use all available resources, opportunity to sensitize students and teachers for environmental sustainability through active involvement of community. It requires continuous effort, synchronized efforts of all stake holders towards improving school environment.

**Methodology**

The data is collected by using interview, observation and field survey. Data is collected about green school practices, initiatives, programme and use of green school practices in school curriculum. Data collected, washed, transcribed, coded and classified according to the related questions.

**Objectives**

The integration of Green School Practices in school curriculum is to make use of Green School Programme model to make environmental related teaching-learning resources available to teachers and investigate impact of Green School Programme model on the awareness among school students.

**Research Questions**

The following research questions are designed to guide the study.

1. What are the characteristics, advantage and challenges of Green School Practices?
2. Do the green school practicing school make environmental related Teaching-Leaning resources available for teachers and students?
3. Do the Green School Practices lead to increase in environmental awareness among students?
4. What is feasibility of Green School Programme model?

**Significance**

1. The present study will contribute to increase meaningful environmental education in school as well as to make a strong platform for teachers and students available to

complement theory with practice in their local environment.

2. The present study is also an advantage to local environment by contributing to the promotion of green foot-prints for schools and in reduction of carbon-foot-prints. It will assist school in cost reduction through resource conservation.
3. The present study will result into a comprehensive green school model framework which will be a tool in helping school curriculum to mould the students into environmental conscious citizen as well as it act as a teaching aid to support major subjects such as EVS, Science, Biology and Social Science as a potential source to improve the students performance in secondary school level.

**Target School**

A purposive sampling procedure is used to select Green School with most Green –facilities. Participating school is also selected on the basis of the year of certification as Green School and certified from 2016 to 2019 continuously.

Interview, questionnaire, observation, field visit are used to collect the data.

**Interview**

The five questions are discussed and aimed to generate date. Interview is also conducted with teachers on application of green school practices as resource for teaching-learning and its impact on awareness on environment among students. Each interview is recorded for accuracy.

**Secondary Source**

The secondary is data collected by using written documents, policies, philosophy, mechanism, reports and photographs.

**Observation**

A guided tour is conducted; researchers took photograph and asked questions. In order to collect evidences about teaching-learning material based on green facilities, initiatives, activities the tour is organized and recorded for accuracy. The tour lasted for 45 minutes.

**Questionnaire**

Questionnaire which consists of ten questions is used to collect data. Totally 20 teachers willingly participated in the study.

**Data Analysis**

The data collected is washed, transcribed, and categorized as per research questions and relevant themes. Individual survey questions and interview questions are matched with research questions by using coding method. Quotations that illuminate the themes, concepts are selected from interview. To corroborate data from the interview and questionnaire are compared.

**Result**

The school initiated green school practices since 2012. The project aims at reduction of carbon emission, energy conservation and securing a proper teaching-learning environment. The school has mission that architecture facilities and human elements must by symbiotic function of education. The ecological facilities, use of green energy, rain water harvesting, green belt development, school garden, reuse of recycled material, window shades efficient utilization, management of these facilities and utilizing these for teaching-learning process. The school improves architectural performance by

1. Equipping school building with eaves to keep sun out, making air flow out, installing outer walls and windows.
2. Equipping resource saving device for light and water. Energy

efficient fan, light and air conditioner system.

3. By creating green energy such as solar heard, sunlight, biomass to reduced carbon dioxide emission.
4. By creating green space in school yard, rooftops, along with wall and biotope space.

To live in accord with the environment and to reduce the burden the school is designed in such a way that it is healthy and conservable.

**Management**

The school utilizes the resources such as water and energy efficiently by preventing waste, ensuring longevity and efficient use of resource. The school is responsible for optimum utilization, maintenance and caring.

**Education**

The use of green school for the education, eco facilities are acquainted and designed in such a fashion that the students can access the experiential learning and the eco-facilities are integrated to school curriculum. The green school practices are framed in such a manner that it is curriculum friendly to achieve its objective to address environmental issues effectively.

**Integration in curriculum**

The environment related contained positioned in subject like science, social science curriculum. It means that environmental education is taught across the curriculum and provides functionally green-facilities as educational resources in Teaching –Learning Process.

Green initiatives and actives:

Green school practices is incorporated in school curriculum and is used as tool to interpret students to real life situation. It enhances their understanding about the environmental issues such as global warming and climate change. It helps students to appreciate innovative, efficient measure and technologies used to address the issues. The exposure of students to Green School Practices, eco-facilities fosters them to recognize the merit of such facilities, helping them positively understanding towards environment. Green activities facilities provide an excellent example and template for students and school acts as whole to "walk the talk" about environmental protection through conservative and climate change action at grass root level. Students can link what they gain through learning experience at school to their local environment.

The observation, survey, interview confirmed that green activities are effectively used as a source of teaching-learning tool for core subjects. It enables students to understand environment related concepts and gap the opportunities of greater experiential learning and gain real life experience. Teachers are using biotopes to explain the ecosystem and other related terminologies, solar panel to explain green energy generation, consumption cost, garden to teach crop husbandry, experimental studies to teach about global warming and pollution. The use of green practices to crop care, observation of planet growth, study and observe growth and life cycle of insects/butterfly, visualize counter measures for green house effect, calculation of the energy generation, consumption and cost etc.,

The green facilities, a biotope is utilized to enhance environmental awareness and contributing a better understanding of eco-system but also provides a broad spectrum of specimen needed for the experimental science and project in the school. Green facilities are used are good source for experiential learning activities, tool to assess the students. Assessment in practical based. Photovoltaic cell panel used to produce green energy from sun and science

worksheet is used in science to calculate energy it can produce. The solar panel is designed, installed and arrange activity in such a way that students can see and count number of cells and use it as learning instrument.

The heat and cold trench made to supply natural cold air in summer and warm air in winter and worksheet used by students. The hot and cold trench is used as teaching aid by teachers. Students are asked to measure temperature difference at inside and outside classroom calculate, discuss temperature differences.

The energy efficient fans, tube light is installed, light intrusive fixture, cold/heat control fixture solar thermal fixture to reduce energy consumption, reduce carbon footprints to combat climate change and global warming to secure positive learning environment and used as tool for experiential learning.

**Green resource as learning tool**

**Table1**

**Green facilities as learning tool**

| Teaching green facilities as learning aid | N | % |
|---|---|---|
| Yes | 15 | 75 |
| No | 05 | 25 |
| **Total** | **20** | **100** |

Result of the study reveals that 75% (n=15) teacher use green resource as teaching learning tool. 50% (n=05) use 6 to 10 green resource as tool for learning.

**Table-2:**

**Extent of green resource used for learning**

| Sl. No | No. of green facilities used | No. of Teachers | % |
|---|---|---|---|
| 1 | 1 to 5 | 05 | 25 |
| 2 | 6 to 10 | 10 | 50 |
| 3 | Zero | 05 | 25 |
| | **Total** | **20** | **100** |

**Table 3**

**Green facilities as significant teaching tool**

| Sl.No | Green Facilities |
|---|---|
| 01 | School Garden |
| 02 | Greening walls and rooftops |
| 03 | Water monitoring/separation |
| 04 | Recycling of material |
| 05 | Photovoltaic cell |
| 06 | Rain water harvesting system |
| 07 | Sun shades |
| 08 | Biotopes |
| 09 | Energy Monitoring |
| 10 | Permissible pavements` |
| 11 | Water incentive facilities |
| 12 | Sky light fixture |
| 13 | Solar thermal system |
| 14 | Greening outdoor areas |

Result shown in Table 4 reveals that more number of teachers marked that green-facilities are significant in teaching-learning process. Photovoltaic cell are significant in teaching science in grade 7 and grade 9. Result suggested that green school model make several facilities

available for teaching-learning tool but some are prospective and some are not used. Few teachers are not interested in these.

**Table 4**

| Sl. No | No of teachers marked significant | No of teachers using learning aid | % |
|---|---|---|---|
| 01 | 16 | 12 | 75 |
| 02 | 16 | 09 | 86 |
| 03 | 16 | 06 | 38 |
| 04 | 12 | 06 | 50 |
| 05 | 14 | 06 | 43 |
| 06 | 09 | 03 | 34 |
| 07 | 08 | 04 | 50 |
| 08 | 10 | 05 | 50 |
| 09 | 03 | 02 | 67 |
| 10 | 05 | 00 | 00 |
| 11 | 05 | 00 | 00 |
| 12 | 08 | 02 | 25 |
| 13 | 04 | 02 | 50 |
| 14 | 04 | 02 | 50 |

**Facilities in Teaching –Learning**

**Level of Green-School Facilities used in Teaching Learning:**

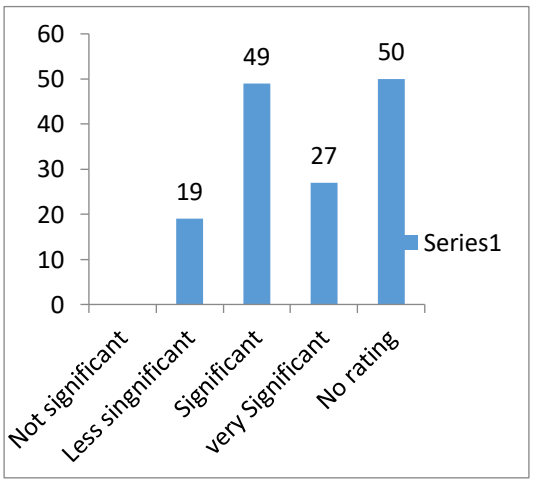


Fig1: Ecogreen facilites significant rating on reaching process (n=20)

As shown in fig 1 above 49% and 27% teachers are of the opinion that integration of green school facilities improves teaching-learning process significantly and very significantly respectively. The 21% teachers are of the opinion that it is less significant on Teaching-learning process. The teachers opinion of green-school facilities has less significant on Teaching-Learning process mentioned the following challenges as contributing elements:

1. Lack of time to use these facilities during teaching-learning process.
2. The application of these resources is not properly emphasized.
3. The teachers require awareness about these resources and knowledge about integration in school curriculum.
4. Some teachers find it difficult to integrate it in school curriculum such as language teachers.
5. Few teachers feel that only science can be integrated with such resources.
6. Sometimes facilities are not properly maintained particularly greenery.
7. Teachers lack conceptual understanding of green school concept.

**Environmental awareness among students**

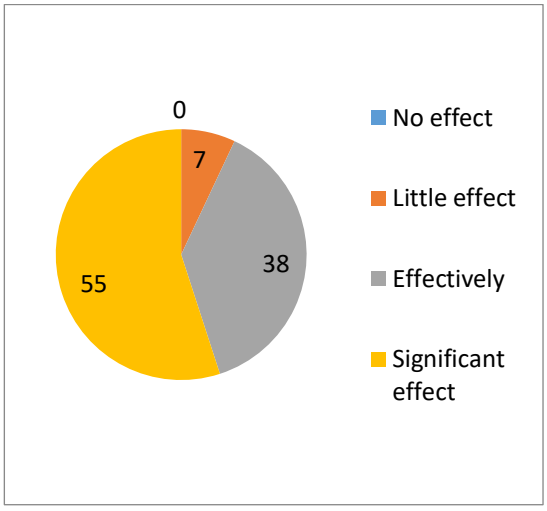


**Fig:2** Teachers opinion about effectiveness of green school facilities on environmental awareness among students (n= 20 )

As shown in figure- 2 55% teachers feel that there is significant effect, 30% feel that there is effect on students and 7% teachers feel that there is only little effect on positive effect of green school practices/resources on environmental alertness among students. Therefore overall 93% teachers feel that green school practices/resources have positive impact on enhancing environmental awareness among school students.

**Conclusion**

1. Educational and ecological aspects are core feature of green school practices. It includes creating school climate that co-exists with nature, energy and energy saving, recycling, creating pleasant ambiance for learning and integration of school green practices/resources in school curriculum effectively.
2. The green school model provides pedagogical, operational, health benefits and sustainable availability of environmental related teaching-learning facilities, pragmatic learning, in natural climate ensuring green facilities laboratories to augment experiential learning for students and teachers, recollection of water, electricity consumption. The glare tree and adequately ventilated learning environment. The teachers effectively use hands-on activities experiential learning activities, assembling tool for broad topic, any students can use problem solving, experimental practice, explanation and observation.
3. Total 75% teachers are able to integrate green school practices/resources in school curriculum of which 25% use 1 to 5, 50% use 6 to 60 of green school practices/activities as teaching-learning tool. 25% teaches were not able to use these resources in teaching learning process.
4. The challenge faced by the teachers is lack of time, poor maintenance and non emphasized teaching aid.
5. The 5% and 38% teachers felt that model is having significant effectiveness and effectiveness in creating environmental awareness among students.
6. The green school model is not securing proper teaching learning environment but also resources for teaching learning and creating awareness among school students.
7. But still there is scope of improvement and making model more effective and efficient by giving orientation to teachers for integrating of green school resources/facilities in school curriculum.

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