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Dept. of Science & Technology, Govt. of India, New Delhi

M.P. Council of Science & Technology
Govt. of Madhya Pradesh
Bhopal

Science Centre (Gwl.) Madhya Pradesh
(A Voluntary Action for Science Communication)

सत्यमेव जयते

National Children's Science Congress

Focal Theme for 2026-2027

Science and Innovation for Sustainability

State Coordination
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How did the National Children's Science Congress (NCSC) begin?

Children's Science Congress (CSC) began as an innovative experiment by Science Centre (Gwalior), Madhya Pradesh, in the early 1990s, engaging children in small scientific projects addressing local community issues. Recognizing its success, the National Council for Science and Technology Communication (NCSTC), Department of Science and Technology (DST), Government of India, adopted the initiative and expanded it nationwide in 1993 as National Children's Science Congress (NCSC). Since then, NCSC has evolved into one of India's most significant science education programmes.

Today, NCSC serves as a flagship programme of NCSTC-DST, empowering children aged 10–17 years—including school-going children, dropouts, children from marginalized communities, and Divyangjan—to explore local challenges through scientific methods, research, and innovation. The programme nurtures critical thinking, creativity, and a scientific outlook while encouraging children to contribute meaningfully towards sustainable community development.

How is the National Children's Science Congress (NCSC) Organised?

The National Children's Science Congress (NCSC) is conducted through a multi-tier selection process designed to identify and nurture innovative scientific research projects undertaken by child scientists. At every stage, projects are evaluated using a common set of criteria, focusing on scientific methodology, originality, relevance to local issues, innovation, simplicity, and practical applicability.

The programme is organized at the following levels: School Level, Block Level, District Level, State Level and National Level.

The journey begins at the School Level, where students undertake research projects under the guidance of teachers and school authorities. Selected projects advance to the Block Level, from where the most promising projects qualify for the District Level programme, coordinated by the District Coordinators of NCSC.

Based on the quality and merit of the projects, the best entries from each district are selected to participate in the State Level Children's Science Congress. Subsequently, projects are evaluated by expert panels, and the most outstanding projects are chosen according to the state quota to represent their state at the National Children's Science Congress—the grand finale of the programme.

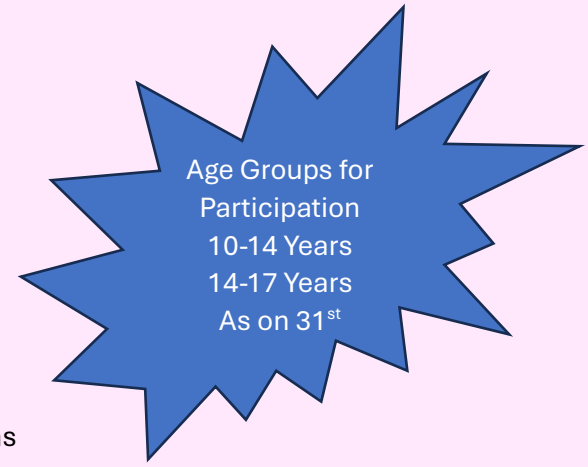
This progressive selection process ensures that young researchers receive opportunities to refine their work, interact with experts, and showcase innovative solutions to local challenges on a national platform.

Objectives of the National Children's Science Congress (NCSC)?

- The National Children's Science Congress (NCSC) aims to provide a unique platform for children aged 10–17 years, including both school-going and out-of-school children, to showcase their creativity, innovation, and scientific aptitude. The programme encourages young minds to identify and address problems affecting their local communities through the application of scientific methods and research-based approaches.
- NCSC inspires children to observe their surroundings critically, identify relevant societal issues, investigate their root causes, and explore practical solutions through scientific inquiry. Participants engage in activities such as observation, data collection, experimentation, field studies, analysis, model building, and innovation to develop evidence-based solutions to real-life challenges.
- By fostering curiosity, critical thinking, and problem-solving skills, NCSC nurtures a scientific temper among children and encourages them to become active contributors to sustainable development. The programme also promotes the spirit of discovery, empowers participants to question and understand various aspects of society and development, and provides them with an opportunity to communicate their findings effectively, including in their mother tongue and regional languages.

What Characterises an NCSC Project?

- Focuses on a local problem or community issue
- Innovative, simple, and practical in approach
- Based on teamwork and collaborative efforts
- Derived from observations of everyday life situations
- Involves field-based surveys, observations, and data collection
- Follows the scientific method and research methodology
- Generates clear findings and evidence-based conclusions
- Directly relevant to the community concerned
- Offers feasible and sustainable solutions
- Includes follow-up plans and action-oriented recommendations
- Promotes scientific temper, creativity, and critical thinking
- Contributes towards sustainable development and community well-being.



In Which Areas Can Research Be Undertaken?

- Research projects should be based on the bi annual focal theme announced for the National Children's Science Congress (NCSC).
- Projects should address one of the identified sub-themes under the focal theme.
- Activity books and resource materials are provided to support child scientists and guide teachers.
- Projects are generally undertaken by a group of two child scientists.
- Guidance may be sought from teachers, scientists, school science club coordinators, and members of science-based voluntary organizations etc.
- Guide teachers receive special orientation and training on the NCSC theme and sub-themes each year.
- Projects should focus on local issues and explore practical, scientific solutions relevant to the community

How to Do a Research Project for the NCSC

Step 1: Choose a Topic

- Identify a local problem related to the NCSC focal theme and sub-theme.
- Select a topic that is relevant, practical, and feasible.

Step 2: Define the Research Question and Objectives

- Frame a clear and specific research question.
- Set the objectives of the study.

Step 3: Review Existing Information

- Gather information from books, journals, websites, experts, and community members.
- Understand what is already known about the topic.

Step 4: Formulate a Hypothesis

- Make a logical prediction based on observations and available information.

Step 5: Plan the Research

- Maintain a logbook for recording activities and observations.
- Finalize the methodology, materials, data collection methods, and timeline

Step 6: Conduct the Study and Collect Data

- Carry out experiments, surveys, field visits, or observations.
- Collect accurate and reliable data systematically.

Step 7: Analyze the Data

- Organize data using tables, graphs, and charts.
- Identify patterns, trends, and relationships.

Step 8: Draw Conclusions

- Interpret the findings and compare them with the hypothesis.
- Suggest practical solutions, recommendations, or future actions.

Step 9: Prepare the Project Report Include:

Title
Introduction
Objectives
Hypothesis
Methodology
Observations and Data Analysis
Results and Conclusions
References and Acknowledgements
Limitations
Annexures

Project Presentation

- Prepare a clear and attractive presentation.
- Explain the problem, methodology, findings, and recommendations confidently.
- Remember: An NCSC project should be for the student, at the student's level, and by the student, with guidance from a teacher or mentor.

1. Oral Presentation

- Present your project clearly, confidently, and within the allotted time.
- Explain the problem, objectives, methodology, findings, and conclusions.
- Share your learning experiences, challenges faced, and innovative solutions developed.
- Each project will be allotted 8 minutes for presentation.
- Models, charts, posters, or PowerPoint presentations may be used as presentation aids.
- The presentation must be made only by the group leader

2. Poster Presentation

- Posters should be prepared on 55 cm × 70 cm (21.6" × 27.5") drawing sheets.
- A maximum of four sheets may be used for presenting a project.
- Posters should effectively highlight the objectives, methodology, observations, results, and conclusions of the project.

3. Report Presentation (Written Work)

- Submit a well-organized project report documenting the complete research process.
- The report should include the title, objectives, hypothesis, methodology, observations, data analysis, results, conclusions, references, and acknowledgements and along with log book.
- The report should be simple, neat, and well-organized. Do not use decorative fonts, fancy designs, colourful materials, or unnecessary decorations on the cover or inner pages.
- Final Tip: Enjoy the process of research and discovery. NCSC is not just about competition—it is about developing scientific thinking, exploring real-life problems, and creating solutions that can make a positive difference in society.

Methods of Project Evaluation

The innovative idea and use of scientific methodology are the primary basis of a good project. The project is evaluated on the following criteria:

- **Originality of Idea and Concept** – Uniqueness and novelty of the project idea and its ability to address a specific research question or hypothesis.
- **Relevance of the Project to the Theme** – Extent to which the project is related to the focal theme and sub-theme.
- **Scientific Understanding of the Issue** – Understanding of the scientific principles, concepts, and issues related to the project.
- **Data Collection and Analysis** – Systematic collection of qualitative and/or quantitative data using appropriate tools, followed by proper tabulation, classification, and analysis.
- **Experimentation/Validation** – Conducting experiments or field studies and validating findings through scientific methods.
- **Interpretation and Problem-Solving Attempt** – Extent to which the objectives and hypothesis have been addressed through the project.
- **Team Work** – Division of work, cooperation, participation, and sharing of responsibilities among group members and beyond the group.
- **Background Correction (District Level)** – Consideration of the geographical location and availability of infrastructure, information, and other facilities to the participants.
- **Presentation –** Evaluation of the Written Report, Poster Presentation, and Oral Presentation separately.
- **Improvement over the Previous Level Suggested (State Level**) – Incorporation of suggestions and improvements made after evaluation at earlier level

Focal Theme 2026–27: Science and Innovation for Sustainability

Earth has sustained life for millions of years through its rich natural resources. However, rapid industrialization, excessive consumption, and unsustainable human activities have led to environmental challenges such as deforestation, pollution, biodiversity loss, climate change, and natural disasters. Recent warning signs, including heatwaves, extreme rainfall, melting glaciers, and rising sea levels, highlight the urgent need for sustainable solutions.

The focal theme, "Science and Innovation for Sustainability," encourages child scientists to explore these challenges scientifically and develop innovative, practical solutions for a sustainable future. It promotes responsible use of resources, environmental stewardship, and scientific thinking to create a greener, cleaner, and safer world for future generations.

To facilitate focused research, the theme has been divided into five sub-themes

Sub-Theme 1: R5 for Waste Management – Reduce, Reuse, Retrieve, Redesign & Recycle

Rapid urbanization, industrial growth, and unsustainable consumption patterns have significantly increased waste generation, posing serious environmental challenges. The R5 approach—Reduce, Reuse, Retrieve, Redesign, and Recycle— promotes sustainable waste management by minimizing waste at its source, extending the life of materials, recovering valuable resources, redesigning products for sustainability, and recycling waste into useful products.

This sub-theme encourages child scientists to investigate local waste-related issues, explore innovative waste management practices, and develop practical solutions that contribute to resource conservation, environmental protection, and sustainable living. The R5 approach emphasizes that waste is not merely a problem to be discarded, but a valuable resource that can be managed scientifically for a circular and sustainable future.

Some suggestion for project topics (Take these topics as guidelines, more topics can be thought)

1. **Food Waste to Compost: A Community Solution**
   - Quantify food waste from homes, schools, or canteens.
   - Develop and evaluate a composting model.
   - High relevance to sustainability and circular economy.
2. **Plastic-Free School Initiative**
   - Measure plastic generation in school.
   - Implement reduction measures.
   - Assess impact through before-and-after studies.
3. **Scientific Assessment of Waste Segregation Behaviour**
   - Study segregation practices in households or schools.
   - Identify barriers and propose solutions.
4. **Community Composting for Sustainable Waste Management**
   - Evaluate feasibility and benefits of decentralized composting.
   - Compare waste reduction and compost production.
5. **Temple Flower Waste Recycling**
   - Study quantity of floral waste generated.
   - Convert into compost, incense sticks, natural colours, or bio-enzyme.
6. **Greywater Reuse for Sustainable Gardening**
   - Analyse household greywater.
   - Evaluate plant growth using recycled water.
7. **Agricultural Waste to Useful Products**
   - Convert crop residues into compost, mulch, biofuel, handicrafts, or packaging materials.
8. **Study of E-Waste Collection Practices in Rural and Urban Areas**
   - Survey disposal practices.
   - Assess environmental risks and recovery opportunities.
9. **Waste Generation Pattern in Weekly Markets**
   - Quantify waste streams.
   - Propose waste minimization and recovery solutions.
10. **Plastic Waste Around Tourist Sites and Heritage Areas**
    - Map plastic waste hotspots.
    - Evaluate visitor behaviour and mitigation strategies.
11. **Analysis of Packaging Waste from Online Shopping**
    - Study growth of packaging waste in households.
    - Develop reduction and reuse strategies.
12. **Retrieval of Organic Waste for Compost Production**
    - Compare compost quality from kitchen, market, and agricultural waste.
    - Recommend best practices.
13. **Redesigning School Dustbins for Better Waste Segregation**
    - Design and test improved segregation systems.
    - Measure changes in segregation efficiency.
14. **Circular Economy Model for School Waste**
    - Track waste from generation to reuse/recycling.
    - Develop a closed-loop school waste management system.

➢ Particularly relevant for rural districts.	**15. Redesigning Waste Collection Systems for Local Communities** ➢ Analyse existing collection practices. ➢ Develop and test improved collection and segregation models.

Sub-Theme 2: E4 for Energy – Explore, Experiment, Enhance & Evolve

Energy powers modern life, but many conventional energy sources contribute to environmental degradation and climate change. The E4 approach encourages child scientists to Explore various energy sources, Experiment with renewable and clean energy technologies, enhance energy efficiency, and evolve innovative solutions for a sustainable future. This sub-theme promotes scientific investigations into energy conservation, renewable energy, and sustainable energy practices.

1. Energy Audit of My School: Exploring Opportunities for Energy Conservation ➢ Measure electricity consumption in classrooms, laboratories, and offices. ➢ Identify major energy losses and recommend solutions. **2. Household Energy Consumption Patterns and Sustainable Energy Saving Practices** ➢ Compare energy usage among households. ➢ Assess the effectiveness of energy-saving interventions. **3. Solar Energy Potential of School Buildings and Community Infrastructure** ➢ Calculate rooftop solar energy generation potential. ➢ Evaluate economic and environmental benefits. **4. Comparative Study of LED, CFL, and Incandescent Lighting Systems** ➢ Measure electricity consumption and cost effectiveness. ➢ Recommend the most sustainable option. **5. Smart Energy Monitoring and Management System for Schools** ➢ Develop a low-cost energy monitoring model. ➢ Study changes in consumption after implementation. **6. Solar-Powered Irrigation Systems for Small Farmers** ➢ Compare energy use and costs with conventional irrigation systems. ➢ Assess feasibility for local agriculture. **7. Energy Efficiency of Traditional and Modern Cooking Methods** ➢ Compare LPG, biomass, solar cookers, and improved cookstoves. ➢ Evaluate fuel consumption and emissions. **8. Biogas Production from Kitchen and Agricultural Waste** ➢ Study gas production potential and waste reduction benefits. ➢ Assess suitability for households or institutions.	**9. Reducing Energy Consumption Through Improved Building Design** ➢ Investigate natural lighting and ventilation in homes or schools. ➢ Measure reduction in cooling and lighting requirements. **10. Waste-to-Energy Potential in Local Communities** ➢ Quantify organic waste generation. ➢ Estimate possible energy production through biogas or other technologies. **11. Role of Electric Vehicles in Reducing Carbon Emissions in Urban Areas** ➢ Study energy consumption and environmental benefits. ➢ Assess awareness and adoption barriers. **12. Energy Conservation Through Behavioral Change in Schools** ➢ Conduct awareness campaigns. ➢ Measure energy savings before and after interventions. **13. Agricultural Residues as Alternative Energy Resources** ➢ Evaluate local crop residues for briquettes, pellets, or biofuel production. ➢ Compare energy values and economic feasibility. **14. Solar Drying of Agricultural Produce: Improving Energy Efficiency and Food Preservation** ➢ Compare traditional drying with solar dryers. ➢ Assess quality, time, and energy savings. **15. Community Renewable Energy Model for Sustainable Villages** ➢ Explore local renewable energy resources. ➢ Design a village-level sustainable energy plan.

Sub-Theme 3: Water – Harvesting, Harnessing, Recycling & Conservation

Water is essential for life, yet increasing demand, population growth, climate change, and pollution are placing immense pressure on water resources. This sub-theme encourages child scientists to explore ways to Harvest rainwater, Harness water resources wisely, Recycle used water, and Conserve water through sustainable practices. It promotes scientific understanding of water management, water quality, water security, and innovative solutions to ensure the availability of clean water for future generations.

1. **Rainwater Harvesting Potential of School Buildings and Its Impact on Groundwater Recharge**
   - Estimate rooftop runoff.
   - Design and evaluate a harvesting system.
   - Measure potential water savings.
2. **Scientific Assessment of Water Wastage in Schools and Development of Conservation Strategies**
   - Identify major points of water loss.
   - Implement corrective measures and assess impact.
3. **Greywater Recycling for School Gardens and Household Kitchen Gardens**
   - Study greywater quality.
   - Assess its suitability for irrigation and plant growth.
4. **Comparative Study of Water Consumption Patterns in Rural and Urban Households**
   - Measure daily water usage.
   - Identify conservation opportunities.
5. **Revival and Scientific Evaluation of Traditional Water Harvesting Structures**
   - Study local ponds, stepwells, tanks, or traditional systems.
   - Assess their contribution to water security.
6. **Impact of Rooftop Rainwater Harvesting on Household Water Availability**
   - Compare water availability before and after adoption.
   - Evaluate economic benefits.
7. **Water Quality Assessment of Local Ponds, Wells, and Community Water Sources**
   - Monitor seasonal variations.
   - Identify sources of contamination.
8. **Smart Water Monitoring System for Household and School Water Conservation**
   - Develop a low-cost monitoring system.
   - Evaluate reduction in water wastage.
9. **Scientific Study of Water Leakage and Water Loss in Public Water Supply Systems**
   - Quantify losses.
   - Suggest practical solutions.
10. **Drip Irrigation versus Traditional Irrigation: A Comparative Water Efficiency Study**
    - Measure water consumption and crop performance.
    - Recommend efficient irrigation practices.
11. **Wastewater Reuse for Sustainable Landscaping and Urban Green Spaces**
    - Study feasibility and environmental benefits.
    - Assess plant growth and soil health.
12. **Community Awareness and Behavioural Change for Water Conservation**
    - Conduct surveys and awareness campaigns.
    - Measure changes in water-saving practices.
13. **Farm Ponds as a Sustainable Solution for Water Security and Climate Resilience**
    - Evaluate storage capacity, groundwater recharge, and agricultural benefits.
14. **Role of Native and Drought-Tolerant Plants in Water Conservation**
    - Compare water requirements of different plant species.
    - Recommend sustainable landscaping options.
15. **Developing a Water-Secure School: A Comprehensive Water Management Model**
    - Integrate harvesting, recycling, monitoring, and conservation.
    - Create a replicable model for schools

Sub-Theme 4: Food, Agriculture & Health

Food, agriculture, and health are closely interconnected and essential for sustainable development. Nutritious food supports physical and mental well-being, while sustainable agricultural practices ensure long-term food security without harming soil, water, biodiversity, or the environment. This sub-theme encourages child scientists to explore the relationship between food systems, farming practices, nutrition, public health, and environmental sustainability, and to develop innovative solutions for healthier people and a healthier plan

1. **Kitchen Gardens for Nutritional Security: Impact on Household Health and Food Diversity**
   - Assess changes in vegetable consumption, nutrition, and food expenditure.
   - Develop a model for household or school kitchen gardens.
2. **Nutritional Assessment of School Children and Strategies for Improving Dietary Diversity**
   - Study dietary patterns and nutritional deficiencies.
   - Recommend locally available nutritious foods.
3. **Scientific Evaluation of Millets as a Sustainable and Nutritious Food Source**
   - Compare nutritional value, water requirement, and environmental impact with other cereals.
4. **Food Waste in Households and Schools: Causes, Impacts, and Sustainable Solutions**
   - Quantify food waste.
   - Develop reduction and composting strategies.
5. **Comparative Study of Organic and Chemical Farming Practices on Soil Health and Crop Quality**
   - Analyse soil properties and crop outcomes.
   - Assess long-term sustainability.
6. **Impact of Pesticide Use on Food Safety, Human Health, and the Environment**
   - Survey farming practices.
   - Study awareness and safer alternatives.
7. **School Nutrition Gardens as a Tool for Improving Health and Environmental Awareness**
   - Evaluate educational and nutritional benefits.
8. **Indigenous Crops and Traditional Foods for Sustainable Nutrition and Food Security**
   - Document local crops and their nutritional significance.
9. **Farm Waste to Compost: Improving Soil Health and Reducing Agricultural Pollution**
   - Compare compost quality and crop performance.
10. **Safe Drinking Water and Community Health: A Scientific Assessment**
    - Test water quality and study health outcomes.
11. **Role of Pollinators in Food Production and Sustainable Agriculture**
    - Assess pollinator diversity and crop productivity.
12. **Food Preservation Techniques: Traditional versus Modern Methods**
    - Compare effectiveness, cost, and environmental impact.
13. **Impact of Climate Change on Local Agriculture, Food Availability, and Community Health**
    - Study changes in crop patterns and food security.
14. **Sustainable Water Management in Agriculture and Its Effect on Food Production**
    - Evaluate irrigation practices and crop yield.
15. **Relationship Between Lifestyle, Nutrition, Physical Activity, and Health Among Adolescents**
    - Study health indicators and develop awareness interventions.

Sub-Theme 5: Application of Indian Knowledge Systems for Sustainability

India's rich cultural and scientific heritage offers valuable insights for sustainable living. Traditional practices related to health, agriculture, water management, biodiversity conservation, architecture, and natural resource management reflect a deep understanding of harmony between humans and nature. This sub-theme encourages child scientists to explore, document, scientifically evaluate, and apply Indian Knowledge Systems (IKS) to address present-day sustainability challenges and promote environmentally responsible lifestyles.

1. **Scientific Evaluation of Traditional Water Harvesting Systems for Modern Water Security**
   - Study local ponds, baolis, tanks, johads, or tribal water conservation structures.
   - Assess their effectiveness in groundwater recharge and water conservation.
2. **Indigenous Seed Conservation Practices and Their Role in Food Security**
   - Document traditional seed preservation methods.
   - Compare germination and resilience with modern storage practices.
3. **Traditional Pest Management Techniques versus Chemical Pesticides**
7. **Traditional Food Systems and Their Contribution to Nutritional Security**
   - Study local foods, millets, seasonal diets, and their nutritional value.
8. **Indigenous Weather Forecasting Methods and Their Scientific Accuracy**
   - Compare traditional indicators with actual weather observations.
9. **Traditional Housing Designs for Energy Efficiency and Climate Resilience**
   - Compare indoor temperature and comfort in traditional and modern houses.

➢ Test effectiveness of neem, ash, cow urine, herbal extracts, etc. ➢ Evaluate environmental and economic benefits. **4. Scientific Assessment of Panchgavya and Other Traditional Bio-Inputs in Sustainable Agriculture** ➢ Compare crop growth, soil health, and yield. ➢ Traditional Grain Storage Systems and Reduction of Post-Harvest Losses ➢ Study local storage structures and their scientific basis. **5. Sacred Groves as Community-Based Models of Biodiversity Conservation** ➢ Document biodiversity and conservation outcomes. ➢ Analyse ecological benefits. **6. Medicinal Plants Used in Local Communities: Scientific Validation and Conservation** ➢ Survey traditional uses and evaluate awareness regarding sustainable use.	**10. Earthen Pots versus Refrigeration: Scientific Study of Sustainable Cooling Methods** ➢ Investigate cooling efficiency and energy savings. **11. Traditional Water Purification Methods and Their Effectiveness** ➢ Study techniques using copper vessels, moringa seeds, charcoal, sand filtration, etc. **12. Community-Based Conservation of Sacred Trees and Their Ecological Importance** ➢ Assess biodiversity, carbon storage, and environmental benefits. **13. Indigenous Knowledge-Based Solutions for Waste Management and Resource Conservation** ➢ Study traditional practices of reuse, repair, composting, and biodegradable materials. **14. Integrating Traditional Knowledge and Modern Science for Sustainable Living** ➢ Develop and test a model combining local traditional practices with modern technologies.

Model Project:

1.Project Title

"Waste Audit of Our School: Analysis and Comparison of Different Types of Waste Generated in Schools"

Abstract

Waste generation has become a major environmental concern. Schools contribute significantly to waste production through paper use, food consumption, plastic packaging, garden maintenance, and electronic equipment. This project aimed to quantify different types of waste generated in our school over one month and compare the findings with near-by schools. Statistical tools such as mean, median, mode, standard deviation, and percentage analysis were used. The study revealed that food waste is the largest contributor, accounting for 36% of total waste generated. The findings highlight the importance of waste segregation, recycling, composting, and awareness programs in educational institutions.

2.Introduction

Waste management is one of the most important environmental challenges today. Schools generate different types of waste every day, including paper, plastic, food waste, garden waste, and e-waste. Improper disposal of waste can lead to pollution, health hazards, and wastage of resources.

Conducting a waste audit helps understand the quantity and composition of waste generated and provides a scientific basis for planning waste reduction strategies.

3.Objectives

a) To identify different types of waste generated in the school.
b) To quantify daily and monthly waste generation.
c) To compare waste generation with nearby schools.
d) To study student awareness regarding waste management.
e) To suggest sustainable waste reduction measures.

4.Hypothesis

1. Null Hypothesis (H_0)

There is no significant difference in waste generation patterns between our school and other schools.

2. Alternate Hypothesis (H_1)

There is a significant difference in waste generation patterns among schools due to differences in waste management practices, student behavior, and infrastructure.

5.Methodology

Study Area

The study was conducted in four schools:

School Code	School Name
A	Our School
B	School B
C	School C
D	School D

Sample Size

- 400 students surveyed
- 20 teachers surveyed
- 30 days of waste monitoring
- schools compared

Step 1: Survey

Students were surveyed regarding waste generation and disposal practices.

Step 2: Waste Collection

Daily waste was collected and segregated into:

1. Food Waste
2. Paper Waste
3. Plastic Waste
4. Garden Waste
5. E-Waste

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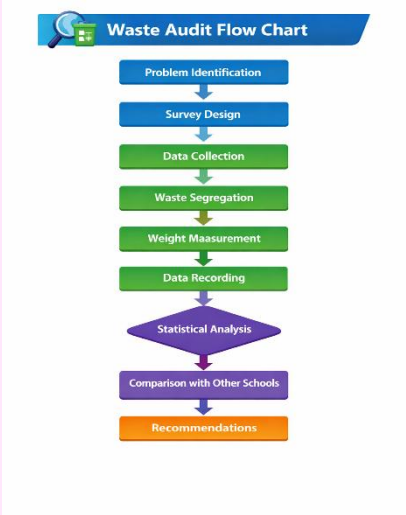
Step 3: Measurement

Each category of waste was weighed daily using a digital weighing scale

Step 4: Data Analysis

Data were compiled and analyzed using MS Excel.



7. Observations and Data Analysis

Monthly Waste Generated in Our School

Waste Type	Total Waste (kg/month)
Food Waste	540
Paper Waste	360
Plastic Waste	240
Garden Waste	300
E-Waste	60
Total	1500

Daily waste Generation

Day	Total Waste (kg)
1	48
2	50
3	49
.....	52

Total

Monthly Waste = 1530 kg

Comparison With Other Schools

School	Students	Monthly Waste (kg)
Our School	1200	1500
School B	1300	1800
School C	1000	1250
School D	1400	2000

Survey Analysis

Student Responses (n = 400)

Question	Positive Response
Use reusable water bottles	320 (80%)
Segregate waste	250 (62.5%)
Participate in cleanliness drives	290 (72.5%)
Support waste reduction campaigns	360 (90%)

Statistical Analysis

Mean	Median	Mode
Mean Daily Waste = Total Waste ÷ Number of Days = 1530 ÷ 30 = 51 kg/day	Median Daily Waste = 51 kg/day	Mode = 50, 51 and 52 kg (Multimodal Distribution)
Maximum Waste 55 kg/day	**Minimum Waste** 48 kg/day	**Range** Range = 55 – 48 = 7 kg
Standard Deviation Standard Deviation ≈ 2.12 kg	**Interpretation:** The low standard deviation indicates that daily waste generation remained relatively stable throughout the month.	
Coefficient of Variation CV = (2.12 ÷ 51) × 100 = 4.16%	**Interpretation:** Since CV is less than 10%, waste generation was highly consistent.	

The following graphs were prepared using MS Excel:

Graph 1	Line Graph showing daily waste generation over 30 days
Graph 2	Pie Chart showing percentage composition of waste.
Graph 3	Bar Graph comparing total waste generated by different schools
Graph	Stacked Bar Graph showing category-wise waste generation in each school.
Graph 5	Histogram showing distribution of daily waste generation.

8. Results

Food waste was the largest component, accounting for 36% of total waste.
2.Paper waste contributed 24% of total waste.
3.Plastic waste contributed 16%.
4.E-waste contributed only 4%.
5.Our school generated less waste than Schools B and D.
6.Most students were aware of waste reduction practices.
7.Statistical analysis indicated consistent waste generation.
8.Significant differences in waste generation existed among schools.

9. Conclusions

The study successfully quantified different types of waste generated in schools and compared them with nearby institutions. Food waste emerged as the major contributor to overall waste generation. Statistical analysis demonstrated stable waste production patterns, while comparative analysis revealed significant differences among schools.

The study confirms that schools implementing segregation, recycling, composting, and awareness programs generate lower waste and contribute positively toward environmental sustainability.

Recommendations

1. **Install color-coded waste bins throughout the campus.**
2. **Start composting food and garden waste.**
3. **Promote digital assignments to reduce paper consumption.**
4. **Conduct regular awareness campaigns on waste management.**
5. **Encourage reusable water bottles and lunch containers.**
6. **Establish a school recycling centre.**
7. **Organize annual e-waste collection drives.**
8. **Form student Eco-Clubs for monitoring waste management.**

References

a) Central Pollution Control Board (CPCB) Guidelines.
b) Ministry of Environment, Forest and Climate Change, Government of India.
c) Swachh Bharat Mission Resources.
d) UNEP Waste Audit Guidelines.
e) School Waste Management Handbook.

Acknowledgements

I express my sincere gratitude to our principal, teachers, students, and supporting staff for their valuable cooperation during the project. I am especially thankful to my guide teacher for continuous guidance and encouragement. I also thank the participating schools for sharing data and supporting the comparative study.

Limitations

1. **The study was conducted for only one month.**
2. **Seasonal variations were not considered.**
3. **Waste generation may vary during examinations and special events.**
4. **Comparison was limited to four schools.**
5. **Some survey responses may contain personal bias**

Annexures

1. **Annexure I – Student Survey Form**
2. **Annexure II – School Survey Form**
3. **Annexure III – Daily Waste Audit Record Sheet**
4. **Annexure IV – Excel Statistical Analysis**
5. **Annexure V – Graphs and Charts**
6. **Annexure VI – Photographs of Waste Collection and Segregation Activities**
7. **Annexure VII - Logbook**

National Programme	: Dec 2026-Jan 2027
State Programme	: Nov 2026
District Programme	: Sep-Oct 2026

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