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ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE
14

Sustainable Spaces and Smart Transportation

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Sustainable school design prioritizes energy efficiency, sustainable materials, water conservation, indoor environmental quality, and community engagement. Passive design strategies like natural daylight can reduce artificial lighting, improve students' well-being, and enhance the educational environment.

Learning Objectives

- Green school buildings are dynamic learning environments.
- Operations and Maintenance for Whole School Sustainability
- Meaningful, purposeful, and engaging learning
- Sustainable Spaces and Smart Transportation
- Energy Efficiency - Lighting
- Energy Efficiency - Plug Loads & HVAC Systems
- Water Efficiency and Quality
- Indoor Environment: Air Quality and Acoustics
- Smart Cleaning & Integrative Pest Management
- Materials and Resources
- Emerging Design and Technology
- Summary and Resources
- SCS Quiz: Test Your Knowledge!

INTRODUCTION

- Sustainable spaces include green infrastructure, such as green roofs, permeable pavements, and urban forests, to manage stormwater and improve air quality.
- Mixed-use development promotes coexistence of residential, commercial, and recreational spaces, reducing transportation needs.
- Smart transportation uses advanced technologies and data analytics to improve transportation efficiency, safety, and sustainability.
- The convergence of sustainable spaces and smart transportation fosters a holistic approach to urban development.
- Transit-Oriented Development (TOD) promotes walking and cycling, while Smart Mobility Hubs encourage multi-modal travel.
- Data-driven urban planning uses big data and analytics to make informed decisions about infrastructure investments and transportation planning.
- Collaboration among governments, communities, and private stakeholders is essential for the success and longevity of these initiatives.

SUSTAINABLE SPACES IN EDUCATION



- Schools should minimize ecological impact while maximizing social and economic benefits.
- Energy Efficiency: Incorporating passive design strategies like maximizing natural daylight can reduce reliance on artificial lighting and improve student well-being.
- Sustainable Materials: Schools can use recycled, locally sourced, or sustainably harvested materials.
- Water Conservation: Implementing rainwater harvesting systems and xeriscaping can reduce reliance on local water supplies.
- Indoor Environmental Quality: Schools can enhance indoor environmental quality by using low-VOC paints and finishes, improving ventilation systems, and maintaining optimal humidity levels.
- Community Engagement: Schools like the Sustainable School in Portland actively engage students and the community in sustainability projects.

SMART TRANSPORTATION IN SCHOOL BUILDINGS

- Active Transportation Promotion: Schools can implement programs that promote walking and biking.
- Public Transportation Integration: Schools can work with local transit authorities to improve public transportation access.
- Smart Technology Utilization: Integration of smart technologies like real-time tracking of school buses and mobile applications for parents and students can enhance the convenience of school transport.
- Electric and Alternative Fuel Vehicles: Schools can transition to electric or alternative fuel vehicles to reduce carbon emissions.
- Carpooling and Ridesharing Programs: Schools can facilitate carpooling and ridesharing among families to decrease traffic congestion and emissions.



ADDRESSING UNHEALTHY & UNSUSTAINABLE ISSUES IN SCHOOL GROUNDS

Unsafe Conditions:

- Poorly maintained playground equipment and inadequate lighting can pose physical hazards to students.
- The presence of hazardous materials like lead in paint or asbestos in older buildings can pose significant health risks.



UNSUSTAINABLE PRACTICES

- Excessive use of synthetic fertilizers and pesticides can lead to soil degradation, water pollution, and loss of biodiversity.
- Schools often operate using outdated HVAC systems that consume more energy than necessary, leading to higher greenhouse gas emissions.





UNHEALTHY CONDITIONS

- Poor air quality and lack of green spaces can lead to unhealthy conditions.
- Schools in urban settings may experience elevated levels of air pollution, exacerbate respiratory issues such as asthma.
- The absence of green spaces and outdoor environments can hinder students' physical and mental well-being.



ROLE OF GREEN COMMUNITY PARTNERSHIPS (SCS'S)

- SCSs can advocate for sustainable practices and policies.
- They can influence change through policy reforms at the local and state levels.
- SCSs can enhance awareness about the importance of sustainable practices among students, parents, and staff.
- Investing in infrastructure improvements can reduce runoff and improve groundwater recharge.
- Green spaces within school grounds are vital for fostering healthier environments.



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