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MODULE

9

The Cost Benefits of Green Schools

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Green building is a sustainable approach that minimizes environmental impact through design, construction, and operation, incorporating principles like LEED /BSAS, focusing on ecosystem services, energy efficiency, and resource conservation.

Learning Objectives

- Introduction
- Getting Started with Sustainable Building
- What Does a Successful Green School Look Like?
- The DNA of Whole School Sustainability
- Teaching projects and problem-based learning
- Green School Management, Aesthetics, and Efficiency
- Design Principles for Whole School Sustainability
- Policy, Safety, and Diversity, Equity, and Inclusion in Green Schools
- Green Building Basics and Cost Benefits
- Healthy Ecosystems for Learning



INTRODUCTION

- Green schools incorporate energy efficiency, water conservation, sustainable materials, and indoor environmental quality.
- They aim to minimize environmental impact while creating healthier learning environments.
- Green schools typically have lower operational costs due to energy, water, and maintenance savings.
- They benefit from additional funding sources like the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant Program and the Green Schools Program in California.
- Green schools improve educational outcomes and health benefits for students and staff, leading to financial savings.
- Healthy indoor environments reduce the incidence of respiratory issues, reducing absenteeism and healthcare costs.

KEY SUSTAINABILITY TERMS AND CONCEPTS

- Sustainability refers to the ability to maintain balance in ecological, social, and economic systems.
- Ecosystem Services: Benefits humans receive from natural ecosystems, including clean air, water, pollination of crops, and climate regulation.
- Energy Efficiency: Uses less energy to perform the same task or produce the same outcome.
- Water Conservation: Practice of using water efficiently to reduce unnecessary water usage.
- Life Cycle Assessment (LCA): Evaluates the environmental impacts of a building throughout its life cycle.
- Indoor Air Quality (IAQ): The quality of air inside buildings, which can significantly affect occupant health and comfort.



GREEN BUILDING BEST PRACTICES

- Site Selection and Development: Prioritize locations that minimize disruption to existing ecosystems.
- Energy and Resource Efficiency: Implement energy-efficient systems and use renewable energy sources.
- Sustainable Materials: Choose materials that are recycled, rapidly renewable, or sourced sustainably.
- Water Efficiency: Incorporate systems that reduce water consumption.
- Indoor Environmental Quality: Use low-VOC paints and finishes, improve ventilation, and maximize natural light.



COSTS AND BENEFITS OF GREEN BUILDING

- Costs: Higher upfront cost due to the use of sustainable materials and advanced technologies.
- Benefits: Reduced utility costs through energy-efficient designs and systems.
- Increased Property Value: Sustainable features can enhance a property's marketability.
- Health and Well-being: Improved indoor air quality and natural lighting contribute to occupant health.
- Environmental Impact: Contributes to reduced greenhouse gas emissions, lower water usage, and decreased waste generation.



INTENTS OF LEED / BSAS CREDIT CATEGORIES

- Location and Transportation: Encourages sustainable site location and reduces transportation impacts.
- Sustainable Sites: Aims to minimize the impact on ecosystems and water resources.
- Water Efficiency: Reduces water consumption in buildings and landscaping.
- Energy and Atmosphere: Focuses on optimizing energy performance.
- Materials and Resources: Encourages the use of sustainable materials.
- Indoor Environmental Quality: Enhances occupant comfort and well-being.
- Innovation: Recognizes exceptional performance and innovative strategies that contribute to sustainability beyond the existing LEED credits.

COST BENEFITS OF GREEN SCHOOLS

- Operational Savings: Green schools use energy-efficient systems, reducing energy costs by 30% to 50%.
- Water Conservation: Implementing rainwater harvesting systems and low-flow fixtures can reduce water usage by 20% to 30%.
- Maintenance and Lifecycle Costs: Sustainable materials have longer lifespans and require less maintenance than conventional building materials.
- Health and Productivity: Green schools contribute to improved indoor air quality, leading to higher student performance and reduced absenteeism.



GRANT FUNDING FOR SUSTAINABILITY

- U.S. Department of Education Green Ribbon Schools Program: Schools demonstrating significant efforts to reduce environmental impact may receive federal and state funding.
- Environmental Protection Agency (EPA) Grants: Schools can apply for these funds to develop green infrastructure projects.
- State-Level Programs: Many states have funding programs for sustainable education initiatives.



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LEVERAGING PARTNERSHIPS FOR SUSTAINABILITY



- Governmental Partnerships: Schools can partner with local governments to access resources and expertise in implementing sustainable practices.
- Non-Profit Organizations: Non-profits focus on environmental education and sustainability, offering resources, training, and funding opportunities.
- Corporate Sponsorships: Companies with CSR initiatives may provide financial support or in-kind donations for sustainability projects.

LOW- OR NO-COST WAYS TO BE SUSTAINABLE

- Behavioral Changes: Encouraging students and staff to adopt sustainable practices can significantly reduce a school's ecological footprint without incurring costs.
- Community Engagement: Schools can engage the local community in sustainability projects, minimizing costs while enhancing community ties.
- Curriculum Integration: Incorporating sustainability into the curriculum can raise awareness and engage students in environmental stewardship.



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IMPACT ON THE LOCAL COMMUNITY

- **Community Health:** Green schools contribute to better public health outcomes by promoting sustainability and reducing pollution.
- **Economic Development:** Green schools stimulate local economies by creating jobs in construction, maintenance, and educational programming.
- **Environmental Awareness:** Green schools serve as models for sustainability, inspiring other community members to adopt similar practices.
- **Strengthened Community Ties:** Green schools involve local stakeholders in their planning and implementation processes, strengthening community bonds.





EVALUATING SUSTAINABILITY INITIATIVES IN PREK-12 GREEN SCHOOLS

- Evaluation is a systematic process assessing the effectiveness, efficiency, and impact of sustainability initiatives.
- For green schools, evaluation is critical to ensure sustainability initiatives align with educational goals and community values.

Interconnection of Sustainability Initiatives

- Sustainability initiatives within a school can be categorized into three domains: campus, curriculum, and community.
- A comprehensive evaluation framework is required to understand these synergies.

EVALUATING CAMPUS SUSTAINABILITY INITIATIVES

- Define objectives: Establish clear, measurable objectives for campus sustainability initiatives.
- Gather data: Gather quantitative and qualitative data.
- Develop performance indicators: Develop KPIs that align with the objectives.
- Engage stakeholders: Engage students, faculty, and maintenance staff to provide insights into the effectiveness of initiatives.
- Analyze and Report: Analyze collected data to assess whether objectives were met.



EVALUATING CURRICULUM SUSTAINABILITY INITIATIVES

- Ensure curriculum framework alignment: Integrate sustainability concepts into the curriculum framework.
- Use assessment methods: Use formative and summative assessments to gauge student learning and engagement with sustainability concepts.
- Evaluate the effectiveness of professional development programs aimed at equipping teachers with the knowledge and skills to incorporate sustainability into their teaching.
- Assess student and community engagement: Assess the level of student engagement in sustainability projects and their connection to the community.

EVALUATING COMMUNITY RELATIONSHIPS

- Establish clear goals for community partnerships.
- Evaluate whether partnerships provide mutual benefits.
- Implement regular feedback mechanisms to gauge satisfaction with the partnership.
- Assess the tangible impacts of community engagement on both the school and the community.





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