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ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C), GSAS CGP, GCP, ISO 14001

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MODULE

**5**

# Teaching projects and problem-based learning

KRISHNAJI PAWAR - CEO & FOUNDER

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

[WWW.BEYONDSMARTCITIES.IN](http://WWW.BEYONDSMARTCITIES.IN)



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Project- and Problem-Based Learning (PBL) is a student-centered, interdisciplinary approach that promotes collaboration, critical thinking, and knowledge application, particularly in green schools, which emphasize sustainability and environmental education.

# 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

- Project-Based Learning (PBL) and Problem-Based Learning (PBL) are pedagogical approaches that engage students in active learning through real-world problems.
- PBL involves students applying skills and knowledge to create a tangible outcome, often culminating in a presentation or display of findings.
- PBL focuses on students working in groups to solve complex, real-world problems, learning through inquiry, discussions, and developing multifaceted solutions.
- Green schools are uniquely positioned to implement PBL effectively due to their focus on sustainability and environmental education.
- Projects and problems should be relevant, engaging, and aligned with curricular standards.
- Reflective practice is crucial in both PBL and green school education, allowing students to articulate their learning experiences and assess their understanding of sustainability concepts.
- These approaches enhance academic learning and prepare students to become responsible stewards of the planet.

# TEACHING CHALLENGES & REWARDS

- Requires organization, analysis of target audience, understanding of human development and pedagogical approaches.
- Requires reflection on practice, expert content knowledge, patience, and enthusiasm.
- Teachers shape future generations of world citizens.
- Traditional teaching approach, using lectures, is efficient but lacks critical thinking and analysis for long-term retention.
- Students are passive learners who do not engage their emotions during lectures.
- Effective learning requires relating information to previous learning and transferring it to long-term memory.
- Students interpret the environment using five senses, with some items registering only in short-term memory and quickly forgotten.



# INTEGRATING INQUIRY AND PROBLEM-BASED LEARNING WITH GREEN SCHOOL PRACTICES

## Theoretical Framework

- Inquiry-Based Learning (IBL) emphasizes student's role in learning, encouraging exploration and discovery.
- Rooted in constructivist theories, positing learning as an active process where learners construct their own understanding.
- Problem-Based Learning (PBL) presents learners with real-world problems to solve, fostering critical thinking and collaborative skills.

## Green School Practices

- Focus on sustainability, environmental consciousness, and ecological literacy within educational environments.
- Aim to cultivate awareness of environmental issues and encourage sustainable behaviors among students and staff.



# SYNERGISTIC INTEGRATION



- **Inquiry into Environmental Issues:** Students can engage in projects exploring local environmental challenges.
- **Problem-Solving for Sustainability:** Through PBL, students can develop solutions to real-world environmental problems.

## Conclusion

- Integrating IBL and PBL with Green School practices enhances academic engagement and prepares students to become informed and responsible citizens.

# STUDENT-CENTERED, EXPERIENTIAL LEARNING

- Outdoor experiences promote students' learning, thinking, sense expansion, and physical and mental health.
- Local environments can increase students' motivation and show relevance to the community.
- Green schools can use the building and grounds for project-based, experiential learning.
- Experiential learning uses life experiences to construct knowledge and solve learning problems.
- It supports students in the transition from abstract to concrete action and back again.
- Experiential learning is a feedback loop that begins with experience and uses reflection as an evaluation process.





# STUDENT-CENTERED, EXPERIENTIAL LEARNING



- Students gain problem-solving competence, make new discoveries, and enhance their comprehension.
- Experiential learning increases student self-efficacy as they directly utilize what they are learning and receive immediate feedback.
- An example of experiential learning using the school building is understanding the school's energy system.
- Incorporating gardening into the curriculum can help with resiliency and personal responsibility.
- This type of learning is transformative, holistic, open-ended, and encourages student autonomy.
- Teachers need to remain vigilant as motivation among students varies.
- Teachers need to share power with students and be transparent in decision-making.

# TRANSITIONING TO CRITICAL THINKING IN EDUCATION

- Emphasizes the need for transition from low-level learning to critical thinking.
- Stresses the importance of professional development and networking with experienced teachers.
- Highlights the need for understanding students, implementing diverse pedagogical approaches, reflecting on practice, patience, and enthusiasm.
- Suggests incorporating meaningful experiences to enhance long-term memory retention.
- Highlights the benefits of sustainability education in enhancing student performance, critical thinking, and life skills.
- Advocates for a holistic, theme-based approach for long-term idea retention.
- Emphasizes the ultimate goal of education: helping students understand their place in the world.



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**CONTACT US**



+91 6363032722



[info@beyondsmartcities.in](mailto:info@beyondsmartcities.in)



[learn.beyondsmartcities.in](http://learn.beyondsmartcities.in)



#55,HMR Layout ,Bengaluru ,India



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