



Maya: Environmental Architect Career Pathway Lesson

Backyard Investigation

Storm Water Career: Architect

All Careers Full- Course Lesson Plan #:
10 of 15

Next Lesson Plan Title (Full-Course):
Scope Quest: Unraveling Project Possibilities

Select Career Short-Course Lesson Plan #:
4 of 6

Next Lesson Plan Title (Short-Course):
Scope Quest: Unraveling Project Possibilities

SUMMARY

In this lesson, students collaborate to design Green Storm Water Infrastructure based on community engagement.

FOCUS & GOALS

In learning about landscape design, students will:

- Understand community needs in GSI design decisions
- Explore multi-use solutions for storm water management
- Participate in hands-on activities for practical learning

MATERIALS NEEDED

- Mock Site GSI Design print out, 11x17 color if plausible & optional to laminate
- Marking materials (i.e. stickers, markers, post-its) in three different formats (i.e. colors or shapes)
- Case study handouts (examples of multi-use storm water designs)

LEARNING OBJECTIVES

- Recognize the importance of community input in the design process and learn about design charrettes
- Collaborate to re-imagine their campus layout for improved storm water management
- Analyze multi-use storm water designs and their benefits through case studies
- Engage in hands-on activities to understand the impact of various Best Management Practices (BMPs) on storm water management

VOCABULARY

Design Charrette - A collaborative workshop gathering community input for design projects.

Landscape Performance - Measure of the effectiveness of landscape solutions to fulfill purpose.

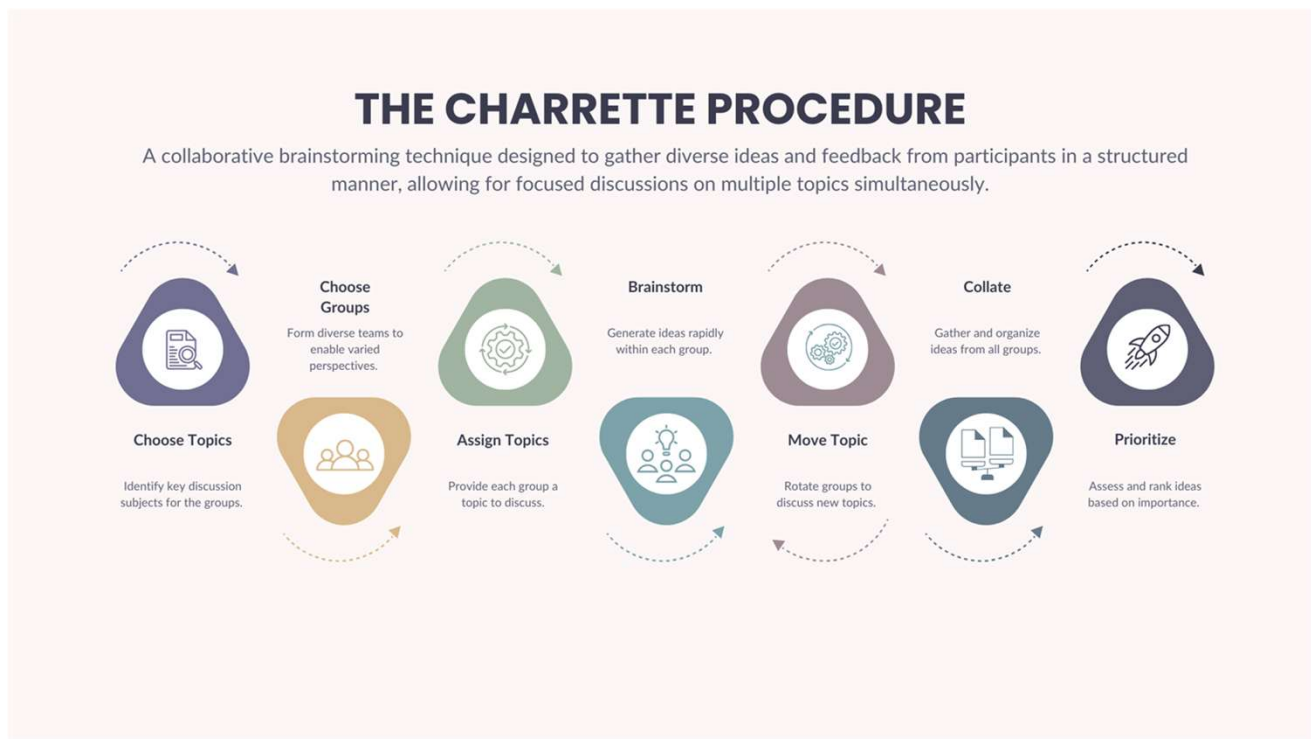
Multi-Benefit Design - Planning and implementing projects to achieve multiple positive outcomes across various dimensions.

Background

This lesson builds upon the previous exploration of Green Storm Water Infrastructure (GSI), where students identified 3-4 areas on their mock site that could benefit from storm water management strategies. During that session, students engaged in a critical analysis of various GSI types, such as rain gardens, permeable pavements, and bioswales, and examined their respective advantages and disadvantages for each identified area. The focus on GSI serves not only to manage storm water effectively but also to enhance ecological function and aesthetics within their community.

A key theme throughout these discussions has been the importance of community input in the design process. Understanding the needs and concerns of community members is essential for creating effective and sustainable infrastructure. By incorporating public feedback, landscape architects can develop solutions that consider potential impacts, practical uses, and maintenance requirements of GSI installations. This approach fosters a sense of ownership and accountability among residents, crucial for the long-term functionality of these systems.

The concept of a design charrette will be introduced as a collaborative tool for collecting community perspectives. Design charrettes provide an opportunity for multiple stakeholders to voice their opinions, share ideas and multiple topics, and directly influence design outcomes. By informing students about this process, they will gain insight into how professional landscape architects facilitate community involvement in their projects to achieve designs that reflect local values and priorities.



In addition to discussing community engagement, this lesson will delve into multi-use GSI solutions by providing case studies that showcase successful implementations. Students will examine how these innovative designs can serve multiple functions, such as improving water quality, creating green spaces, and offering recreational opportunities. These examples highlight the versatility and effectiveness of GSI in urban contexts and can inspire students to think creatively about their own designs.

This lesson plan includes hands-on activities that involve marking and re-imagining mock campus GSI design features while applying their learning through optional extension activities, such as using a GSI Impact Calculator to evaluate their design's effectiveness and initiating capstone presentations. By synthesizing these concepts through collaborative work and experimentation, students gain practical knowledge of storm water management practices, emphasizing the vital role landscape architects play in enhancing storm water management and community resilience. Overall, this approach reinforces the importance of community engagement and collaborative design processes, providing a comprehensive understanding of sustainable landscape architecture.

I. Case Studies of Multi-Benefit Designs Activity

1. Ask students to share some of their favorite Green Stormwater Infrastructure they've learned about. Have them share why they like them. Ask if they think some of the features they like have benefits beyond capturing, infiltrating, and/or treating storm water. Have them reflect and share on some of these benefits. Examples would be that plants attract wildlife, they're aesthetically pleasing, or they provide shade or cooling.
2. Relate their reflections to multi-benefit design, the approach in planning and architecture that aims to achieve multiple positive outcomes through a single design solution. This approach is becoming more popular, particularly with GSI projects.
3. Hand out the Multi-Benefit Storm Water Designs worksheet and case study handout. Have students review the case study examples of successful multi-use storm water designs and complete the first table of the worksheet. Ensure students identify a variety of benefits from these designs, such as habitat creation, urban beautification, and runoff reduction. If there is time and resources, share the video from the resources section
4. Next, have groups discuss their design ideas from Lesson 9 and share how they could incorporate multi-use designs. Encourage constructive feedback from classmates. Then, complete the next table in the worksheet.

II. Classroom Charrette Activity

1. Share the "How Design Happens" diagram and briefly discuss the role of landscape architects, particularly in storm water management.
2. Present the importance of community input in landscape design and how it impacts the effectiveness of designs.
3. Explain the concept of design charrettes as a collaborative approach to design. Illustrate the process using the "How Design Happens" graphic provided or video example as provided in the Videos sub-section in the Resources section below.
4. Let students know they will be participating in their own mini charrette to provide input on a potential GSI design for the mock site.
5. Divide students into small groups of 4 to 7 and provide them with the Elevating Storm Water Design with a Community Charrette worksheet and a large print out of the Mock Site GSI Design.



6. Provide each group with stickers and instruct them to assign a recorder. Then, have them work through the worksheet as a group. Allow up to 20 minutes for them to complete this activity.
7. Once the groups have completed their worksheets, ask the recorder to share a summary of key discussions.

III. Designing with Community Input Activity

1. Share with students that the next step is to include community input from the classroom charrette into the site design.
2. Let them know that as the site managers, they now will collectively work to identify what inputs to incorporate into the design and how this will be done. If they already have worked as a class, either skip this step or arrange for other students and/or staff to participate.
3. Either assign a recorder and provide a large print out of the Mock Site GSI Design for them to mark up and fill in the Community Input portion of their worksheet as students lead a classroom discussion, or provide a projected or shared digital copy where you assist leading the discussion and fill in the worksheet and mark up the Mock Site GSI Design given the classroom input.

Adaptations and Resources

Storm Patrol Project Based Learning Activity Track:

- Students complete the Design & Innovate section of their workbook.
- Introduce the GSI Impact Calculator to the students (<https://gsiimpacthub.org/calculator/>)
- Have students practice using the tool by working through the GSI Design Impacts worksheet. For your reference, the Mock Site GSI Design results document can be found here: https://bit.ly/MockSiteGSI_Benefits
- Instruct students to now input data from their project designs into the calculator to predict the storm water management implications of their designs.
- Share the Design Presentation Assignment sheet, review the presentation template, and instruct students to complete Phase 1 & 2 by next lesson.
- Inform students they should use the summary of benefits from the GSI Impact Calculator for their project to complete their Capstone Presentation.

Activity-Centric Learning Track:

Conduct Activities I, II, and III.

Tips to Truncate Lesson:

- Use sticky notes for quick GSI sharing.
- Limit benefit discussions to quick round-robin sharing.
- Simplify How Design Works and landscape architect roles.

Tips to Extend Lesson:

- Investigate GSI-focused landscape architecture and urban planning firms.
- Include role-playing to explore diverse community viewpoints.
- Introduce design tools for hands-on GSI modeling.

Resources:

Public Participation Tools

- Environmental Protection Agency (EPA), *Public Participation Guide: Charrettes*, <https://www.epa.gov/international-cooperation/public-participation-guide-charrettes>

Tools for Teachers

- American Society of Landscape Architects (ASLA), *Career Discovery*, <https://www.asla.org/become-a-la/career-discovery>
- ASLA, *Education Resources*, <https://www.asla.org/focus-areas/climate-biodiversity-action/case-studies/sustainable-landscapes-case-studies/education-resources>
- Landscape Architecture Foundation, *Resources for Educators*, <https://www.landscapeperformance.org/resources-for-educators>

More case study designs

- ASLA, *Designing Our Future: Sustainable Landscapes*, <https://www.asla.org/sustainablelandscapes>
- <https://www.landscapeperformance.org/sites/default/files/inline-files/Tang-2023-student-work.pdf>

Videos

- ASLA, *Leveraging the Landscape to Manage Water*, <https://www.asla.org/focus-areas/climate-biodiversity-action/case-studies/sustainable-landscapes-case-studies/animations/leveraging-the-landscape-to-manage-water>
- Virginia Tech, *Learning Landscape Labs Design Charrette*, <https://youtu.be/KsSAwDyW84Q>

Interactive Learning Sites

- GSI Impact Hub, *GSI Impact Calculator*, <https://gsiimpacthub.org/calculator>

