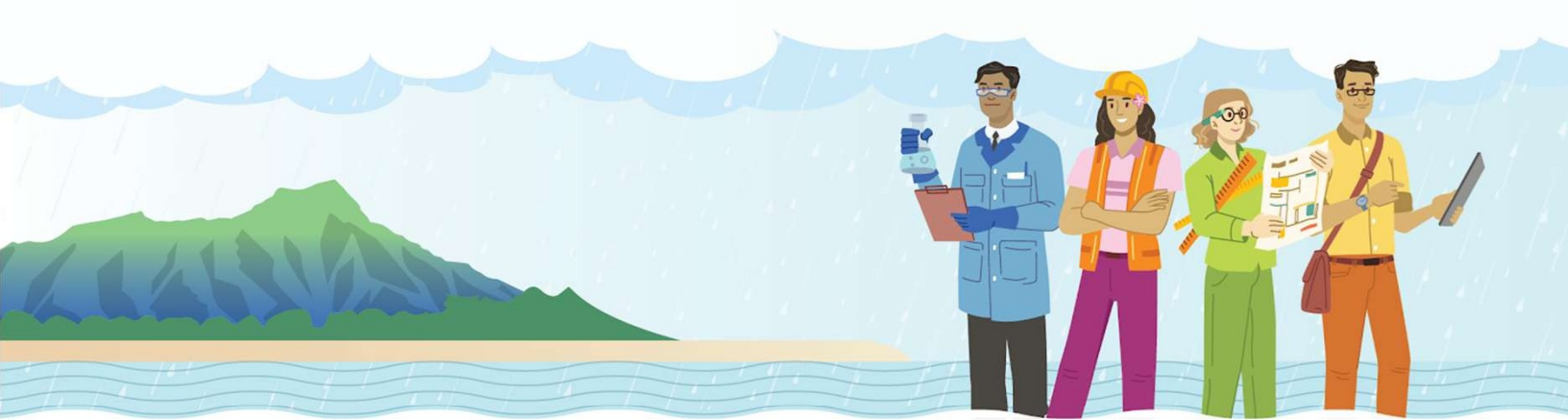




Scope Quest: Unraveling Project Possibilities

Storm Water Career: All

All Careers Full- Course Lesson Plan #: 11 of 15

Next Lesson Plan Title (Full-Course): Project Playbook: 5 Steps to Success

Select Career Short-Course Lesson Plan #: 5 of 6

Next Lesson Plan Title (Short-Course): Project Playbook: 5 Steps to Success

SUMMARY

In this lesson, students will learn the fundamentals of project management in storm water management, focusing on defining project scope, establishing objectives, and fostering collaboration. Through interactive activities, they will experience the differences between micro-management and collaborative approaches, reinforcing essential skills for effective project execution.

FOCUS & GOALS

In learning about project management and developing scope, students will:

- Understand the concept of project scope and its relevance to storm water management
- Develop practical project management skills, including planning, organization, and communication
- Foster teamwork and collaboration by engaging in hands-on activities that simulate real project scenarios

MATERIALS NEEDED

- Picture of baffle box LEGO® build or bridge book build structure (for reference)
- LEGO® bricks if making a baffle box, or alternative building materials (blocks, books, etc.) if making a bridge.
- Box or Bridge Build Instructions
- Stopwatch or timer
- Printed guidelines for each activity (optional)
- Whiteboard or notepad and markers for brainstorming session (for PBL Activity)
- Storm Patrol Project Workbook (for PBL Activity)

LEARNING OBJECTIVES

- Define the key elements of project scope, including deliverables, objectives, milestones, and constraints
- Demonstrate effective collaboration and communication strategies within a team to achieve project goals
- Apply project management techniques to real-world scenarios in storm water management and beyond

VOCABULARY

Collaboration - The process of working together with others to achieve a common goal, emphasizing teamwork and shared contributions.

Micro-management - A management style characterized by excessive control and oversight of team members' work, often hindering autonomy and productivity.

SMART Objectives - Specific, measurable goals that guide project direction through actionable task formulation.

Vocabulary Continued

Project Management - The profession that makes things happen by planning, organizing, and executing project activities.

Project Scope - The boundaries and deliverables of a project, outlining what is included and what is excluded from the project.

Background

In our previous lessons, we explored the process of creating Storm Water Pollution Prevention Plans by examining mock and/or real sites, discussed the impact of runoff and pollutants, and learned about Best Management Practices. We also took a closer look at specific aspects and career roles within Storm Water Management. Throughout these lessons, students encountered real-world issues related to their examined sites and were encouraged to investigate possible solutions. Now, imagine if they could actually put one of these solutions into action! To do this, students should learn what it takes to be effective project managers. This first step is to understand what constitutes a project and discover essential initial steps for developing a project plan.

Effective project management is essential for achieving the goals of storm water quality initiatives, as it involves careful planning, organization, and resource allocation. By establishing clear objectives, defining deliverables, and setting timelines, teams can navigate the complexities of projects while minimizing risks and ensuring that all members understand their responsibilities. Not all storm water quality initiatives are a project. A project is typically a temporary endeavor with a defined beginning and end, aimed at accomplishing unique goals.

An important first step to any project is to define its scope. Project scope management is a fundamental aspect of project management that establishes the boundaries and objectives of a project. It involves outlining deliverables, tasks, and goals that must be achieved within a specific timeframe and budget. A well-defined project scope is essential to prevent issues such as scope creep, which can lead to cost overruns, missed deadlines, and an overall decline in project success.

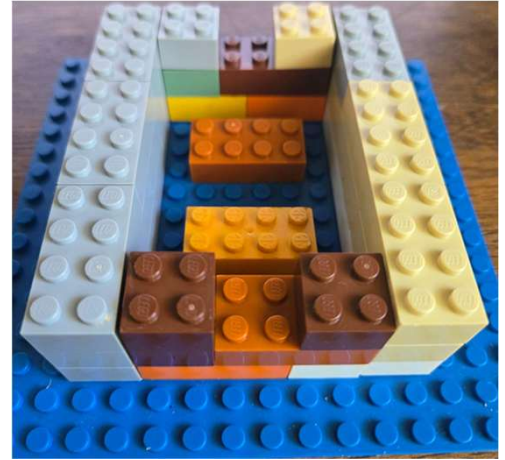
This lesson will delve into the concept of project scope, covering how to create and utilize project scopes effectively. Key elements such as deliverables, objectives, milestones, and constraints will be discussed, providing students with insights into how a well-defined project scope guides resource management and sets clear expectations for team members and stakeholders. Ultimately, students will be equipped with techniques to improve their project management skills and outcomes. As such, these skills are not limited to just storm water management. Students will be well served to develop project management skills in whatever career they choose to pursue.

I. Navigating the Path to Success Activity

1. Share with students that they have learned a lot about different roles in storm water management and have examined their mock and/or real sites, identifying issues and considering solutions. Now it's time for action!
2. Divide students into small groups. Ask one person in each group to be the "Project Manager", while the others are the team members.
3. Take aside your "Project Managers" and assign each a different goal location (i.e. door, desk, sink, etc.).
4. Part 1: Tell your "Project Managers" to direct their team members towards their assigned goal location without revealing where that location is. They can do this by providing direction for each step they take. See the *Example for Navigating the Path Activity* sheet for an overview of how to conduct the activity .
5. Allow no longer than five minutes for Part 1. Stop the students and ask them how many people in each group made it to the goal location within 30 seconds.
6. Discuss differences in the "Project Manager's" approaches. Were some more successful than others? Why?
7. Part 2: Assign new goal locations and tell the "Project Managers" on your cue, they will have 30 seconds to share the goal location with their team and tell them to walk (not run) there.
8. How many people in each group made it to their goal location within the 30 seconds this time? Ask the student if the first or second round was more effective? Why?
9. Ensure students understand the lesson learned: If a project manager is collaborative in providing a vision towards a goal and trusts the team to put in the effort needed, they will be more effective towards that goal. The alternative is micro-management and lack of vision/empowerment, which was the experience in the first round.

II. Building Collaboration Activity

1. Share with students that in this next activity they will apply what they just learned to complete a build challenge.
2. If LEGO® are available, share a photo of the built baffle box (designed to slow down the flow of water, allowing heavier particles to settle out and be trapped) with the students and provide a set of LEGO® for each group.
3. OR, if LEGO® are not available, share a photo of the built bridge with the students and a set of books, blocks, or other relevant objects for each group.
4. Still in their small groups, ask the students to make the box or bridge pictured with the materials provided giving no further direction. They likely will struggle to seek direction and to work together, but it's important for this activity to allow students to figure everything out on their own.
5. Allow up to 15 minutes for them to work. At which time, have students stop and assess their progress.
6. Have them deconstruct what they built.
7. Then ask one student in each group to be a "foreman", give that person some guidance on how to build the shape in modules, showing them the Box or Bridge Build Instructions that suggest the components
8. Ask the foreman to lead the team by assigning different group members to build different components and one person to put it all together.
9. Once they have completed, ask them what worked best. Their answer should be the second build scenario as it provided a structure and plan to the build.
10. Share with them that this activity is project management in a nutshell. In the previous activity, they learned about the importance of shared goals. This activity demonstrates the importance of having a plan, breaking down tasks, and delegating amongst a team.



HINT: Pre-building & disassembling the baffle box with LEGO® or bridge with other materials will aide understanding of what pieces will work and provide insight on the assembly.

Adaptations and Resources

Storm Patrol Project Based Learning Track:

- As a team, students determine what issue and solution from previous lessons to address within the scope of their project. This can be for the mock site or their real world site.
- Explain to students that effective project management begins with a plan, as they demonstrated through the activities they just completed. After sharing that the first step in planning is to define project scope, have students work as a team on the Plan & Prepare section of their Storm Patrol Project Workbook. Lead students as needed, helping to provide examples of SMART objectives, deliverables, constraints, stakeholders, etc.

Activity-Centric Learning Track:

Conduct Activities I and II.

Tips to Truncate Lesson:

- Eliminate the Plan & Prepare: Building Project Scope for Storm Water Quality worksheet and just do the activities.
- Eliminate the activities and just have students complete the Plan & Prepare: Building Project Scope for Storm Water Quality worksheet as a team.

Tips to Extend Lesson:

- Have students research project management tools and/or templates (i.e. Gantt charts, online software such as Asana, or other specialist tools).
- Besides the Storm Patrol Project Based Learning Activity, another way for students to practice project management is through a classic activity called "Survival on the Moon". Two links in the resources section offer directions on how to conduct this activity.

Resources

Survival on the Moon Activity

- Brief instructions and worksheets, <https://www.uaf.edu/museum/education/educators/heliophysics-aurora-outre/activities/pdfs/Survival-on-the-Moon.pdf>
- Complete lesson plan, <https://discoverspace.org/wp-content/uploads/2020/05/Project-Management-lesson.pdf>

Reference with details on project scope

- <https://aloha.co/blog/project-scope-a-comprehensive-guide-to-project-management>

