



Created By: Claudia Soto, Nancy Farhoud, Jasmin Barajas, John Pham, and Yifeng Liu Grade: 3 rd to 7 th Subject: Science		Number of Minutes: 90 minutes	
Enduring Understanding and/or Essential Question	By creating a terrarium and marshmallow tower, students will understand how to observe, plan, and execute a design while exploring concepts related to biology, engineering, and creative problem solving. How can we use our observations and creativity to design and build a terrarium and a stable marshmallow tower using toothpicks and marshmallows? This essential question encourages students to use critical thinking and problem-solving skills, while also promoting exploration of concepts related to life sciences and engineering.		
Content Standards (TEKS)	8.1(g): develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and 5.12(a): observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem;		
English Language Proficiency Standards (ELPS)	Speaking 3.E Share information in cooperative learning interactions Listening 2.D Monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed.		
Prior Learning/Prior Thinking	The lesson builds on students' prior knowledge of plants and engineering, but some may have misconceptions that the teacher can address. Students can deepen their understanding through discussion with peers and clear explanations from the teacher.		
Learning Objectives and Aligned Assessments			
Objectives	Pre-Lesson Assessment	During-Lesson Assessment	Post-Lesson Assessment
Objective #1: Students will be able to apply	Mini-group discussion where students will share	Participants' responses to questions throughout lesson duration.	Students will be assessed based on the

basic engineering principles such as stability, balance, and structure.	about past experiences and prior knowledge to the question: “What makes a structure stable”	Instructors will be asking questions to assess understanding level.	quality of their verbal explanations.
Objective #2: Students will be able to apply creativity and experimentation.	Mini-group discussion where students will share about past experiences and prior knowledge to the question: “What makes a structure stable”	Hands-on activity to let students try out different designs and shapes to see what works best.	Students will be assessed based on the structure they built.
Objective #3: Students will be able to describe the movement of matter among animals, plants, decomposers, and the environment.	Students will receive a handout about the terrarium environment. They will be able to share prior knowledge amongst themselves.	Participants’ responses to questions throughout lesson duration. Instructors will be asking questions to assess understanding level.	Summative assessment of questions in handout.

Assessment and Instruction Accommodations for Students with IEP/504 plans

Accommodations:
 Providing extra time or breaks during the activity, as needed.
 Providing visual aids, such as diagrams or pictures, to help the student understand the concepts.

Assessment and Instruction Accommodations for Multilingual Students

Accommodations:
 Allowing students to use bilingual dictionaries or translation apps, if available and appropriate.
 Allowing students to demonstrate their learning through different means, such as verbal responses, drawings, or labeled diagrams.

Academic Language

Academic Language Demands and Supports

Language Function	Vocabulary
The students will be able to: <ul style="list-style-type: none"> - Listen to group mates during building modules - Speak and share ideas with group mates to improve 	Students will be able to: <ul style="list-style-type: none"> - Write and answer questions related to lesson vocabulary: <ul style="list-style-type: none"> o Terrarium o Springingly

collaboration during building modules Support: <ul style="list-style-type: none"> - Group Work - Visuals - Modeling 	<ul style="list-style-type: none"> o DIY - Apply vocabulary in speech: <ul style="list-style-type: none"> o Stability o Balance Support: <ul style="list-style-type: none"> - Group work - Modeling - Guided Terrarium handout
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Instructional Procedures

Materials

1. Beverage stirrers
2. Toothpicks
3. Air-dried clay
4. Mini marshmallows
5. Terrarium kit
6. Water
7. Measuring tape

Lesson Component	Activities/Teacher Actions	Instructional Support (Individuals/Groups)
activity 1	Instructors will go over the activity, so they can know what to expect.	Instructors will walk around and offer help and ask the participants questions to guide them.
activity 2	Instructors will go over the activity and read the information handout. Students will then follow the instruction manuals provided in each terrarium kit.	Additional clarification and modeling may be provided upon request.

Additional Lesson Plan Components

Safety Precautions	Students mishandling toothpicks, or potentially eating unhygienic candy.
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