K-12 STEM Outreach: Plan, Prepare, Lead

Plan Outreach:

- Get full event details
- Select appropriate activity or demo
- Use planning checklist to prepare for your event

Prepare for Hands-on Activities:

- Practice activity BEFORE the event
- Consider open-ended questions & redesign options
- Look for every day ENGINEERING connections

Lead Hands-on Activities:

1. Introduce
   - Be friendly and enthusiastic
   - Introduce yourself as an engineer and why you chose that career (“My name is xxx and I am an engineer because I like working with others”)
   - Briefly introduce the activity and explain why this is RELEVANT TO ENGINEERING
   - Use engineering messaging key words “create”, “imagination”, “innovation”, “discovery”, “design”, “contribution”

2. Facilitate
   - Ask open ended questions to encourage brainstorming
   - For younger students (Pre-K - 3rd) provide additional assistance in handling the materials or modify activity objectives
   - For mixed groups (older and younger students combined) assign different roles (older students use the glue guns; younger students put it together)
   - Have redesign options ready if participants finish early

3. Wrap-up
   - REITERATE THE PURPOSE OF THE ACTIVITY AND THE ENGINEERING CONNECTION
Engaging Adults in Hands-On Activities

Expect a wide spectrum of engagement from adults when you are facilitating an activity:

<table>
<thead>
<tr>
<th>Less engaged</th>
<th>More engaged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking my iPhone</td>
<td>Doing the project for my kid</td>
</tr>
<tr>
<td>Sitting back and watching</td>
<td>Helping with the tricky parts</td>
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</tbody>
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There are many reasons why an adult is **not engaging** in an activity with a child:
- They are intimidated by the content of the activity (e.g., “I’m not good at math”, “I’m just not a science person”)
- They don’t know how they can help their child
- They perceive that as the facilitator you are the expert and they don’t want to get in your way or disrespect you
- They have other children to watch over at the same time

**You can help by:**
- Exude a warm, friendly, welcoming attitude to children and their adult companions
- Identify ways adults can help and tell them explicitly (e.g., “Ma’am, you can use the hot glue gun to attach the wheels”, “Dad, you can help test out the car by using a stopwatch”)
- Praise adults for their efforts at helping (e.g., “I like the way you are working together!”, “You and your daughter make a great team!”)

There are many reasons why an adult may **take over** an activity:
- They want their child to be successful with the activity
- They want to help their child, and this is the only way they know how.
- They are so excited by the activity that they want to do it themselves!

**You can help by:**
- Clarify an adult’s role by giving them specific ways to help (e.g., “Mom, you can use the hot glue gun while your daughter decides where to put the wheels”, “Dad, you can time the car with the stopwatch while your child runs the test”)
- Emphasize the process of the activity and not the product (e.g., “It’s OK if your car doesn’t look like the example”, “It’s fun to learn from your mistakes!”)
- When appropriate, give adults their own materials so they can do the activity alongside their child.