

Professional Development Situation: Meeting

Skill Focus: Modeling Engineering Practices

Time Required: 30 minutes

DISCUSSING TESTING IN THE DESIGN PROCESS

Participants will do a chalk talk around engineering design and testing in order to incorporate thoughtful testing and local resources.

Agenda

See the Skill in Action—10 minutes

- [Real-World Modeling of the Engineering Process](#) video-based learning module

Chalk Talk—15 minutes

Discussion – 5 minutes

Materials

- Computer with internet connection
- Projector and speakers
- Pens for participants
- Two pieces of chart paper and markers
- [Real-World Modeling of the Engineering Process](#) video-based learning module

Before the Session

- **Read this meeting guide** to become familiar with the content and allow time to personalize the activities to best suit your presentation style. Watch all videos and read informational materials.
 - *Italics indicate text that can be read aloud or emailed to participants.*
- Send reminder email about the meeting. Determine if any participants require accommodations (sight; hearing; etc.).

- *The next professional development opportunity to enhance our STEM skills will be on DATE at TIME at LOCATION. Our focus for this session will be “Modeling Engineering Practices”. Let me know if you require any accommodations to participate in the training. I am happy to answer any questions you have and look forward to seeing you at the workshop. I can be reached at CONTACT INFO.*
- Gather all materials needed for the session.
- Think about possible questions participants might have during the meeting. Create potential responses to be explored through informal conversation. Review any key terms or ideas that may be unclear.
- On the day of the session, test the audio and video equipment.

Session Outline

See the Skill in Action (10 min)

- Cue up the [Real-World Modeling of the Engineering Process](#) video-based learning module.
- **Welcome participants** to the meeting. Explain that the purpose of the meeting is to reflect on the engineering design process and how we can help youth understand the role of testing and failure in the design process.
- We will start by watching an engineer discussing the work of the designing and testing a bicycle that can be used on the moon.
 - *Watch to see what the role of testing is for this engineering team.*
- **Show the video** and then discuss as a group.
 - *How does this engineer use testing?*
 - Having someone sit on it
 - *How many failures did the team had before they found their final solution?*
 - They tried many different materials that did not work.
 - *What preliminary steps are there in the process before testing?*
 - Computer-simulated models, re-testing, meeting several criteria, building prototypes
 - *How can we talk to youth about the importance of testing?*

Chalk Talk (15 min)

- Lay out two pieces of chart paper on big tables where participants can reach them. (If you have more than six people in your group, set up additional areas for more small groups.)
- A **Chalk Talk** is a silent “conversation” specifically designed to encourage collaboration and attention to the ideas of others. Participants write their ideas on a public surface,

like chart paper or a markerboard. This encourages people who may not speak up in a group to share their ideas, and gives everyone a voice.

- **Introduce the activity.**
 - *We will be doing a Chalk Talk related to STEM and engineering design in particular.*
 - *In a chalk-talk, you have a silent conversation with other participants. You can ask questions, agree and disagree, and offer evidence or support for the contributions from others. You'll do all of this through writing. Chalk talks are helpful in learning contexts because they encourage learners to slow down their thinking in order to articulate ideas in writing. We'll do this for about 10 minutes. Have fun with it and try to make sure at least 5 of your ideas are represented.*
 - *The questions you will be responding to are: 1) What big life lessons can we learn from testing our engineering designs? 2) How can we get youth connected to local problems to solve and local engineers?*
- **Try not to over-facilitate** the conversation as participants work.
- Other questions you can add to the written conversation:
 - *Can youth gain a science identity from engineering-focused activities?*
 - *Engineers have to deal with a lot of failure – what life lessons can this teach youth?*
 - *How can we help all youth (including shy or insecure youth) get involved with engineering?*
 - *Do we know of other educators that could help us think up more engineering ideas?*
 - *What places could we take youth to think about engineering?*

Discussion (5 min)

- At the end of the paper-based conversation, debrief through a group discussion.
 - *What did this type of activity allow?*
 - *Could you use this with your youth?* (Answers will depend on the age of the youth; this activity is best suited for 4th grade and up.)

After the Session

- Email the participants:
 - *Thank you for your participation in the recent Click2Science training on “Modeling Engineering Practices”. I hope you found it useful and applicable to your practice. Consider sharing your learning about engineering design and*

testing with a co-worker, supervisor, or friend. Please let me know if you have any questions. You can reach me at CONTACT INFO.

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