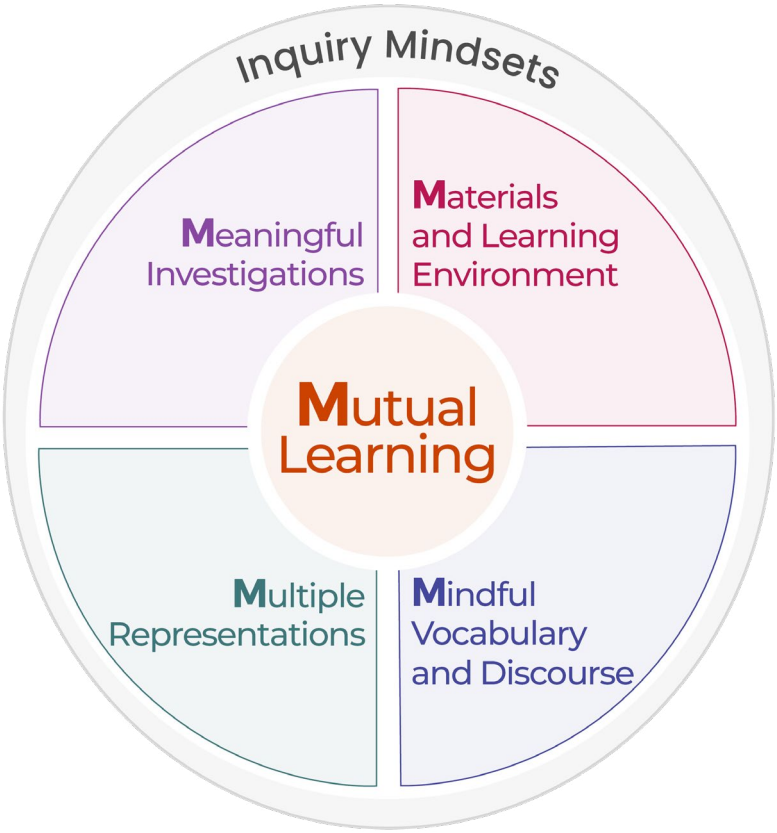
Planning and Supporting Engineering Experiences



This handout guides educators in planning engineering experiences using the M[5] Early STEAM Approach.

The Experience

Review the **Inquiry Starters: Engineering** handout for ideas of engineering experiences you can plan for children.

Describe the engineering experience you might provide for children:

- What problems might children identify?
- In what ways will they plan solutions?
- How might children test and iterate?

Preparing Your Mind for Engineering

Inquiry mindsets include the ways that educators think and feel about inquiry (including engineering) and children's abilities. Engineering can be messy. It can be unpredictable. How might you best prepare your mindset to be ready to embrace the engineering process?

Mutual Learning and Meaningful Investigations

Make the engineering experience meaningful and effective by keeping it open-ended and connected to children's lives.

- How might you build a connection between children's lived experiences and the engineering experience? Have children experienced a similar problem in a different setting? Do children have prior experiences with the materials?
- Consider ways to connect with families. Are there materials you might ask families to share from home? Is there an opportunity for a family member to share their expertise or experiences with children as these relate to the topic?
- In what ways will the experience be open-ended and playful?

Materials and Learning Environment

- What tools and materials will you provide to support children to plan, create, measure, or evaluate their designed solutions?
- How might you adapt materials to support children with differing abilities?
- How might you adjust the space in your learning setting to make room for children to create and save and revisit their work?

Mindful Vocabulary and Discourse

- What vocabulary might you introduce to children related to the engineering problem they are exploring? For example, if children are creating cars, you might introduce vocabulary such as axle, wheels, force, and friction. Consider ways to pair new words with direct and meaningful experiences.
- In what ways might you support children to communicate about their designs and building process? For example, you might encourage children to work in collaborative groups or you might use protocols to support children to communicate about their designs and building process.
- What are some ways you might support all children to communicate (for example, using augmentative and adaptive communication devices, writing, drawing, signing, or using children's home languages)?

Multiple Representations

- What are some different ways children can represent their plans or solutions (for example, through drawings, paintings, or 3D models)?
- How might you support children to use what they learned from this experience in other related engineering experiences? For example, if children engineer a tower using blocks, they might learn that building a larger, solid foundation makes the structure more stable. Children might apply these ideas to a different building challenge using cardboard boxes.

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