Selecting and Facilitating a Design Challenge

Using hands-on creative problem-solving activities to foster content learning and collaboration

Determining the challenge

When selecting a design challenge, consider whether the challenge:

- ▷ Complements or directly connects to your learning goals (e.g., understanding the mechanics of a lever, exploring the material, or building on the ideas of others)
- ▷ Offers a "low floor and high ceiling"[1]—a simple way into the task so all learners can be easily engaged, along with potential for increasingly complex exploration
- ▷ Gives learners multiple pathways to explore content and solve the challenge, e.g., by playing with an idea or problem that has no set solution
- ▷ Provides opportunities to learn through experimentation and risk-taking
- ▷ Encourages collaboration

Facilitating the experience

Once you have decided on the challenge, consider:

- ▷ Introducing (or co-creating) norms with learners, e.g., what should they do when they get stuck or encounter a conflict?
- ▷ What students need to know or understand before trying the challenge
- ▷ How long the design challenge is likely to take
- ▷ Which materials to make available and how to introduce them
- ▷ How to group your learners (three to four students is often a good starting point)
- ▷ Whether to offer learners a choice of challenges
- ▷ Documenting[2], or asking one to two students to document, the learning process (e.g., what did the group do when they got stuck or made a mistake?). Allow time at the end for groups to reflect on and share their experiences with each other to support metacognition (thinking about thinking).

pedagogy of play

Tips for Using This Tool

▷ The Tech Interactive webpage can get you started on a variety of design challenges: www.thetech.org/content/bowers-institute/resources

▷ Resist the urge to solve problems for your students; it is OK for them to experience challenge. Sitting with and working through difficulty is an important skill to learn.

▷ When students express frustration or need help, suggest they first look to their peers for support.

▷ Depending on your learners and goals, consider limiting the amount and choice of material. This can be both environmentally sound and promote deeper exploration.

▷ Consider having one central area where students keep their materials, which may help them get inspired by each other's work. Try asking students to pause partway through the class period and walk around the room to see what other groups are doing.

▷ Host a school event to engage families in a design challenge like the one their children experience. Post interesting moments or outcomes from the children's learning process. Ask families to reflect on what they learned.

Notes

1. Explore this post by Mitch Resnick to learn more about the idea behind "low floors and high ceilings": mres.medium.com/designing-for-wide-walls-323bdb4e7277

2. To learn more about documentation visit: www.makinglearningvisibleresources.org/uploads/3/4/1/9/3419723/five_features_of_documentation.pdf