
RAFT (<https://raft.net/>) Design Inspirations STEMAZing Virtual Adaptation

Required Materials:

Either an online drawing option or best option, students have paper and broad tip markers.

From original RAFT Idea Sheet: <https://raft.net/wp-content/uploads/2020/08/731-Design-Inspirations.pdf>

Combine two unrelated ideas to inspire a creative new design! Engineers often use everyday objects to stimulate creative ideas. For example, an early ballpoint pen designer might have had a flash of inspiration while looking at a pencil!

Grades covered: 4 through 12

Curriculum Topics: Design, Engineering, Creativity, Drawing

The content behind the activity: The process modeled in this activity is called “morphological forced connections.” There are many stories about engineers and designers who got their best ideas from unexpected sources. A designer working on a space satellite might be inspired by looking at the can opener! Clothing designers and architects routinely integrate patterns from nature into their designs. Copying nature (biomimicry) is also used by engineers (Velcro was inspired by the burrs on a weed seed).

STEMAZing Virtual Adaptation:

This lesson can basically be done as it would be in class. There are a few options for virtual assignment of what students will design and what they will be inspired by.

Option 1: Use the **Design Inspirations subset** Google Slides file.

(<https://bit.ly/DesignInspirationsSubset>) Copy these two slides into your presentation and have students pick two numbers before you get to the picture slide. Those numbers will be between 1-15 (including 1 and 15 as options) and they can pick the same number twice if they want to. Then go to the next slide and they have their assignments. You could also just use the picture slide with the Design a... Inspired by a... options and have students use a random number generator on their phones or devices to determine their assignment.

Option 2: Use the **Design Inspirations with wheels** Google Slides file.

(<https://bit.ly/DesignInspirationsWheels>) Copy and paste this slide into your presentation. When you are presenting and click on the buttons, it will take you to a preset Flippity (<https://www.flippity.net/>) Random NamePicker which has all the original options for the Design a... Inspired by a... cards from the original lesson. Using these

wheels, you can either spin to select options for each breakout room or each student. You could also share these links (<https://bit.ly/FlippityDesignA> and <https://bit.ly/FlippityInspiredByA>) with the students so they can select their own assigned options either by themselves or in a breakout room.

Engagement Options:

There are lots of ways to use Design Inspirations. It can be flipped so students have to complete a Design Inspiration asynchronously and then share their design with the class when you meet next. You can make a rule that no words are allowed on the designs and when an engineer is sharing their design, their peers get to try to guess what they were designing and what it was inspired by. You can also use this as a way to break up synchronous classes – have a few students share to start class and then use a few other students during brain breaks throughout your online time.

You can assign the same Design a... Inspired by a... assignment to the entire class. In this way, you can demonstrate how important it is to have diverse groups working on problems because no two engineers will come up with the same exact solution.

If using in Breakout Rooms, you can put students into breakout rooms of 3-4 students in each room. Then have them run through the Design Inspirations Breakout Room Checklist (<https://bit.ly/DesignInspirationsBreakoutPDF>). If you are using Google Classroom, just assign a PDF copy of this checklist for students to view. (NOTE: The Design Inspirations Breakout Room Checklist is provided as a Google Doc (<https://bit.ly/DesignInspirationsBreakout>) in case you want to edit it or change the times. Just make a copy and make it your own. The checklist has the groups assigning Groupwork Roles to each group member and then working through the activity themselves. They will each draw their own designs, share them with each other, and then come up with a group design that incorporates at least one feature from each group member's original design in the final group design. When students return from the breakout rooms, the Recorder for each group will show the drawing of their design for others to guess what they were designing and what it was inspired by. The Reporter for the group will indicate if it is guessed and then quickly explain the features of the design and who from their group those features came from.

NOTE: If you have not introduced your students to Groupwork roles and norms, consider using this fully virtualized Orientation to Groupwork unit: <https://stemazing.org/ms-virtual-groupwork-unit/>

Another option would be to have students go into breakout rooms. Spin on their own to select options for Design a... Inspired by a..., draw their own designs, share them with their breakout group, get constructive feedback (I like how you did this... AND... I think your design would be even better if you...), redesign their product, and then share again.

Literally too many ways to adapt this to share them all. Get creative and have pHun!