# Project Mindstorming Activity

**Before the activity starts,** make two sets of colored cards. On the first set of (blue) cards include different science fair categories (Chemistry, Biology, Engineering, etc.). On the second set of (red) cards, include an assortment of topics (cars, fish, computers, hockey, etc.). See example cards at the end of this document. Having student's come up with their own topics is a fun twist on this activity as well.

Before you begin, Scatter the blue and red cards around the room.

**Explain the activity to the students.** This activity is intended to help students think creatively and outside-the-box about science research projects. Students will pick up either a blue card or a red card. Blue cards are science fair categories and red cards are random topics. When you say go, each student needs to find a student with the opposite color card. There will be 3 rounds (or as many rounds as you want) and each round, the students will have 3 minutes to brainstorm project ideas. Encourage students to write down their ideas on paper. At the end of 3 minutes, you will announce the round is over (ring a bell, play a sound, etc.) and students will be asked to share their favorite ideas on the whiteboard to inspire others. Students will find a new partner for each round.

**Round 1:** When you (the moderator) say "GO," each student picks up one card. If they have a red card, they find someone with a blue card and vice versa. Pairs are given 3 minutes to brainstorm questions or project ideas for their combined cards. So, for example, if I have the blue card of chemistry and you have the red card of cars, we would brainstorm questions/ideas involving chemistry and cars - like what soap is the most effective for cleaning cars or what fuels are the most efficient. After the 3-minute brainstorming period is over, the moderator rings a bell and asks for groups to share out any ideas that they are excited about by writing them on a whiteboard for all to see.

**Repeat 2-5 more times.** For a 90-minute activity, we typically run 5-6 brainstorming rotations. Each round, students need to find a new partner with a different colored card. You can allow students to pick up new cards between rounds if they want to switch up their topics/categories. You can also make the last round be a "free choice" round and encourage students to brainstorm any topic they'd like.

**After you finish rotations, have the group/class pick one idea on the board** and use this project to walk through the steps of turning that idea or question into a science fair project. For example, at this year's Science Fair Kickoff, we explored the initial idea of "what is the best airplane food?". We asked the students to start sharing ideas on how we could turn that question into a science fair project. We discussed needing to define what "best" means, what "airplane food" means, where the experiment would take place (on the ground, in the sky),

developing a survey instrument, defining our controls and variables, etc. Once we had a defined experiment and an idea of a project plan, we walked through steps to carry out and analyze the project, making sure to consider safe science practices and science fair (ISEF) rules. For instance, in the case of our airplane experiment, we would need IRB preapproval because it involves human subjects.

When running this activity we try take the students step-by-step through the science fair process up through analyzing their data, discussing as a group how might we...(insert step of science fair process here). The How to Science Fair document on our website provides an outline of these steps.

- Plan & Prepare
    - **Identify** your research question
    - **Find out** what is already known
    - **Talk** to subject matter experts
    - **Learn** about science fair rules and paperwork
- Design Your Project
    - **Finalize** your research question
    - **Plan** your experimental procedures
    - **Obtain** necessary pre-approvals
- Start Experimenting
    - **Gather** your materials
    - **Conduct** your experiment
    - **Take** thorough notes as you go
- Complete You Project
    - **Analyze** your findings
    - **Submit** science fair paperwork
    - **Create** presentation materials
    - **Practice, practice, practice** your presentation!

CoorsTek

DMRSEF Denver Metro Regional Science and Engineering Fair

# FROM START TO SCIENCE FAIR

## LEARN MORE AT:

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| | |
|---|---|
| START NOW! IT'S NEVER TOO EARLY! | **Plan & Prepare**<br>• **Identify** your research question<br>• **Find out** what is already known<br>• **Talk** to subject matter experts |
| SEPTEMBER | **Get Involved**<br>• **Attend** a kickoff event<br>• **Register** to participate<br>• **Learn** about fair rules and paperwork |
| | **Design Your Project**<br>• **Finalize** your research question<br>• **Plan** your experimental procedures<br>• **Obtain** necessary pre-approvals |
| | **Start Experimenting**<br>• **Gather** your materials<br>• **Conduct** your experiment<br>• **Take** thorough notes as you go |
| JANUARY | **Complete Your Project**<br>• **Analyze** your findings<br>• **Double-check** and **submit** your paperwork<br>• **Reach out** to DMRSEF staff with questions |
| FEBRUARY | **Get Fair-Ready**<br>• **Revise** forms, if required<br>• **Create** and **submit** presentation materials<br>• **Attend** *Competition Ready Series* events |

This is what a Scientist looks like

## CELEBRATE YOUR SCIENCE AT THE DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!

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Animal Sciences

CATEGORY

Behavioral Sciences

CATEGORY

Biological Sciences

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Material Sciences

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Microbiology

CATEGORY

Physics and Astronomy

CATEGORY

Plant Sciences

CATEGORY

Social Sciences

CATEGORY

CATEGORY

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COVID-19 Masks

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COVID-19 Vaccines

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COVID-19 Epidemiology

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video games

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social media

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sports head injuries

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lakes/rivers

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weather

ITEM

drinking weather

ITEM

trees/forests

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ceramics

ITEM

3D printing

ITEM

fuel cells

ITEM

wind turbines

ITEM

solar energy

ITEM

Sustainable materials

ITEM

recycling

ITEM

makeup

ITEM

football

ITEM

hockey

ITEM

paper

ITEM

musical instruments

ITEM

dinosaurs

ITEM

space

ITEM

rocks

ITEM

taste

ITEM

smell

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hearing

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touch

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cars

ITEM

boats

ITEM

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basketball

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fabric/textiles

ITEM

cameras

ITEM

smart phones

ITEM

fruits and vegetables

ITEM

candy

ITEM

baking

ITEM

plastics

ITEM

computers

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airplanes

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pets

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clothing

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