



About Dig Into Mining

Dig Into Mining is a premiere initiative developed to empower student learning through resources that invite students and educators to uncover the use of metals, such as copper and molybdenum, in our everyday life and instill a deeper understanding of today's mining industry.

Dig Into Mining also provides the opportunity to engage the diverse, active, and innovative community of Freeport-McMoRan employees who can volunteer their time to talk about the mining industry with students and to afterschool programs in their local communities.

Dig Into Mining Volunteer Guide

This guide was created to help volunteers bring Dig Into Mining resources to classrooms and beyond by preparing you to work with students in small- and large-group settings. It provides tips and suggestions for volunteers to engage, explain, discuss and effectively facilitate copper-focused activities to support the next generation of mining professionals.

Note: Please read this volunteer guide in its entirety in advance of contacting an educator or after school program leader. Approval must be granted by site leadership should volunteering occur during official work hours, along with notification to your site Community Development team member about your volunteer outreach.

Impact Opportunities Presented in this Guide

1. Visit a classroom to facilitate an activity
2. Present at a Career Fair
3. Host a STEM or Community Night station
4. Be a guest at an after-school club, activity or Scout meeting

1. Visit a classroom to facilitate an activity

Students and educators welcome guests to share about their work and to engage in activities that reflect the spirit of skills needed in the workplace. If you are interested in facilitating an activity with students, the following information can help you select an activity and prepare your visit.

Prepare for Your Visit

Educator Check In

Once you have connected with an educator or after-school program leader, you will want to work together to ensure a seamless visit. Set up some time together to discuss key details that will make your visit smooth and successful. Items you may want to cover include:

Pre-Visit Discussion Checklist

- Thank them for their interest and provide an overview of the program and activity ideas.
- Ask if there are any requirements or paperwork needed by the school office or after-school club in order for you to visit.
- Discuss how much time is available for your visit.
- Decide together which one of the activities will be used.
- Determine what the educator would like your role to be in facilitating the activity that day.
- Learn what technology will be available and discuss how it can be used in the activity.
- Confirm how many students you will be working with so you know how many materials you will need to bring.
- Ask if the educator will be printing out the student worksheets or if he / she would prefer you to bring them that day.
- Discuss the best way to distribute the activity's materials. If possible, it may be helpful to distribute and / or divide the materials before the class arrives.
- Find out how much background knowledge students already have about the activity's subject. This will help you develop questions for the first step in the activity that are relevant and interesting to this particular class.
- Ask for any other tips or other information that may be helpful to know in advance. Educators have a honed expertise for connecting with students. Consider your assigned educator a valuable resource.

Virtual Participation

When a visit is requested by a group in an area not easily accessible to a volunteer, there may be an opportunity to participate virtually instead of going to the site. The company has access to several platforms, such as Webex and Microsoft Teams, that would allow you to share materials, visuals, and chat with students as they are working.

Work with your assigned educator to determine the applicable items from the Pre-Visit Discussion Checklist above, along with which platform will be used to connect online. Also discuss the role you will take in instructing the students. (For instance: Will you share your screen and walk students through the directions?)

Personal Prep

Once you have spoken with your partner educator and have determined if you will be presenting in-person or virtually, take a little time to make sure you are comfortable with the activity. The following suggestions will help ensure that you're ready to go!

Pre-Visit Personal Prep Checklist

- **Preview the activity** and note opportunities to share real-life stories that make connections to the topics.
- **Check Timing:** Some of the resources may exceed the amount of time allocated for your visit. You may need to select relevant information for the specific situations in which you will be interacting with students. Practice pacing sections of the activity and make note of areas to pause for questions, engage with a personal story, or point out parts of a visual.
- **Determine Presenters:** If you are visiting with a colleague, highlight the lesson sections that you will each be responsible for. Whenever one of you is taking the lead, the other person should continue to be an active participant. This could include rotating around the classroom as students work, working with a group that needs extra assistance, or standing near a student who needs help staying on task.
- **Think about Your Audience:** The students you will be working with are considered adolescent learners. They are intellectual, social and emotional learners. They are very curious and enjoy interacting with peers during learning activities. They like to be active learners and are still experimenting with ways of talking and acting as they learn and grow.

When you enter the classroom, the students may be seated in rows or in small groups. If you will be working with a large group, keep in mind that it can be challenging to assess if all students are engaged or understanding the information presented. Make a mental reminder to walk around the space and make eye contact with different students to help personalize the experience.

- Practice! Run through the information you will be presenting at least a couple of times to make sure you are confident with the material.

The Day of Your Visit

- **Review Your Material One Last Time:** Once you have taken a moment to make sure the material is fresh in your mind, remember to bring a printout of the activity with you. However, don't worry about following all directions exactly as they are written. Just do your best to be aware of the timeframe you have available and steer the activity as needed.
- **Sign In:** Many community centers and schools will require visitors to sign in and out at the main office and wear a visitor pass. To ensure an efficient sign in, have your ID ready.
- **Volunteer Introduction:** When you enter the classroom, take a few minutes to introduce yourself. Start off by telling students your name and why you are visiting their class. Tell them about your experience with mining, what your interests were at their age, and how that translated into the career you have today. Explain to them what you will be learning together and be sure to keep things brief, friendly, and relatable.

Students are going to be very interested and curious with having a special guest and will likely have a lot of questions! Work with the educator to determine the best method for inviting students to ask questions before, during, and throughout the activity.

Activities

Designed for grades 6–12—Science, Technology, Engineering, Art, and Math courses—or for children ages 11–17. Each activity has an expected duration of 45 minutes and includes an overview, guiding question, student outcomes, materials, procedure, and capture sheets.

While every student group is unique and different factors will affect the exact nature of how Dig Into Mining’s resources are used, these resources have been designed according to the following agenda:

Step 1: Volunteer Introduction and [Mining Overview Video](#) (5–8 minutes)

Step 2: Activity (25–30 minutes)

Step 3: Wrap-up (3–5 minutes)

You will want to review these activities with the educator or leader during your pre-visit check-in to determine which activity to facilitate:

Homopolar Motor Motion

https://www.digintomining.com/sites/default/files/content-files/DIM-2020-Homopolar_Motor_Motion.pdf

In this activity, students will discover how the Lorentz force can be used to create a homopolar motor out of just a few magnets, a battery, and copper wire. The Lorentz force is generated when electricity moves through a magnetic field. The copper wire conducts electricity from one end of the battery to the other, creating a force that causes it to spin. Once they understand how this process works, students will be able to get creative, using their hands or pliers to bend the copper wire in a way that they can create spinning shapes, spirals, or even a dancing figure on the top of their motor.

What do you need before you visit the classroom?

(All of these materials also are listed in the activity.)

Per student

- 1 14-gauge piece of copper wire (various lengths depending on the desired shape)
- 1 (or more) neodymium magnet
- 1 AA battery
- Pliers or wire cutters
- Various other craft supplies to add to copper wire designs (glue guns and sticks, fabric, mini pipe cleaners, etc.)

Copper Wars!

https://www.digintomining.com/sites/default/files/content-files/DIM-2020-Activities-Copper_wars.pdf

In this activity, students will investigate the conductivity of copper as they join the “Dark Side” of a popular science fiction universe. They will learn how copper tape can be used to create a circuit, and that the switches can be used to open and close a circuit. Using this knowledge, students will build an LED “lightsaber” out of popsicle or craft sticks, copper tape, LED lights, a simple switch, and a battery. They can choose the color of LED light to symbolize their allegiance, and use “force” from copper to illuminate their lightsaber.

What do you need before you visit the classroom?

(All of these materials are also listed in the activity.)

Per student or per lightsaber

- 3 jumbo popsicle or craft sticks
- Copper tape
- 1 CR2032 battery
- 1 colored LED light (10 mm)
- Electrical tape
- Scotch tape
- Clear mini glue sticks
- Glue gun
- 1 Lilypad button board switch
- Optional—markers, paint, patterned tape to decorate the finished lightsaber

What can you do while students are working?

- Walk around the space and say hello. Ask them what excites them about mining and what questions they may have about your career.
- You can also observe and assist as students may need your help. Try not to solve for the students but guide them to solve for themselves.
- Share a story. Students enjoy hearing stories about what you do for fun and what kinds of things you do at work.
- Be available for questions. Keep an eye on students' ability to process the information you are sharing and look for signs that students have questions or need assistance.

Additional Impact Opportunities

There are also many non-classroom opportunities to foster students' interest in mining. Below are just a few ways you may be asked to work with students outside of a traditional classroom setting. The ideas here are offered as starting points, but feel free to customize them based on the specific event in which you will be participating!

2. Present at a Career Fair?

Career fairs provide a chance to interact with students in both a one-on-one and group setting.

If you have a booth at the fair, come prepared with materials that students can look at and / or interact with.

Whether you share photographs of a past project or a presentation that you recently worked on, having tangible examples of your work will help capture students' interest and provide a starting point for conversations. Copies of the Career Profiles may be helpful as well.

If you are asked to speak at the fair, below is a template for a 45-minute session. If your allotted time is longer or shorter, you can pick, choose, and expand upon the ideas below. Be sure to ask in advance if technology will be available for your presentation, and plan accordingly.

- **Introduction** (5 minutes): Share the Mining [Overview Video](#) and highlight where your role comes into this exciting industry.
- **All about You and Your Career Path** (5 minutes): Allow time for the students to get to know who you were when you were their age. Where did you grow up? What did you enjoy doing in high school? What were your favorite subjects in school? How did you transition from the high school student you just described to the person you are now? What college did you go to? When did you decide what you wanted to be when you grew up? What jobs did you have before the one you have now?
- **Current Role** (5 minutes): What is your current job title? What does this mean? What are your day-to-day responsibilities? What problems does your job help solve? What is the mining industry and how are you a part of it?
- **Future** (5 minutes): What do you aspire to do next? What problems do you still want to solve? What problems could the next generation of mining professionals solve?
- **Question and Answer** (5 minutes)
- **Hands-On Activity:** (20 minutes)
 - Link to Classroom Online Toolkit
 - Cookie Mining—Grades K–5
 - Cu Penny Experiment—Grades 6–8

3. STEM or Community Night station

The structure and expectations of every event will vary. Some evenings may consist of people visiting booths at their leisure, while other evenings may take a more structured approach. Below are prep questions to ask and possible resources to bring that you can use as a starting point to prepare for your participation.

Questions to ask:

- Who will be present?
- What should I be prepared to share?
- How much space will be allocated to each person?
- Will a backdrop be needed?
- Will technology be available for a PowerPoint or video?
- Will people visit the booths freely or will timing be regulated?
- Will I be expected to give a formal introduction or presentation?

Possible resources to bring:

- Laptop displaying the Dig Into Mining Career Exploration for students to discover future careers.
- Laptop(s) with headphones, displaying the Dig Into Mining Day of Learning Virtual Field Trip.
- Copies of the three Career Profiles. You may slip these into page protectors for students to read at your station or print out several copies of each so students can take them home.
- Personal photographs, designs, images, etc., that highlight and / or explain the work that you do.
- Hands-on activity.



4. Guest at an after-school club, activity or Scout meeting

Afterschool clubs and activities are a fun way to interact with students in a less formal environment. Remember, these usually occur right after school and students have just spent the entire day in a structured setting. Try to speak with the adult in charge before you arrive for ideas on how to focus your time with the students and make the session as engaging as possible. You may be able to lead the students in one of the activities, or you may just have enough time to introduce yourself, show a segment from the [Virtual Field Trip](#), have students discover future careers using our [Career Exploration](#), or have a Q&A session about your career!

Last but not least: No matter how you interact with students or which activity you complete together, have fun! This is a great opportunity for you to reach and inspire students in your community and beyond. We hope you find it rewarding, and we thank you for your time and interest in being an ambassador of this program.