

IMAGINING THE FUTURE

Program Expectations: STEM Professionals

Program Objectives

Imagining the Future seeks to increase students':

- a) knowledge of the unique science and technology coming out of local universities and businesses,
- b) interest in STEM careers, and
- c) understanding of the unsolved problems and unanswered questions facing STEM industries.

What is Expected of You

You will visit a K-12 classroom **virtually** on March 12, 2021. We will match you with a teacher, and you will work together with the teacher to plan and schedule your online visit. We expect you to prepare an approximately 30-minute presentation about your career, the questions/problems you are tackling now, and the challenges facing the future of your field. We encourage you to be as interactive as possible. For example, you may bring tools of your trade to show and share, show pictures of your workplace, share your career journey, ask questions and allow for student discussion, show real data and ask students to interpret them, do a brief demo of an age-appropriate scientific concept that relates to your job or industry, or engage the class in a hands-on, inquiry-based activity. Your virtual visit is meant to **get students excited about the work that you do, about the unanswered questions and problems in your field, and about the possibility of a career in your field.** Emphasize how your work can potentially affect the future of our world. Help students see how the STEM concepts they are learning in school are applied in the real world. Avoid doing a demo/activity that is unrelated to your field. ASF staff are happy to help you develop a successful visit - please contact itf@atlantasciencefestival.org.

It is vital that you contact the teacher ahead of time to clarify expectations, to share concerns, and to better understand the students' prior knowledge and expected learning outcomes.

BEFORE THE VISIT

Work with the teacher to plan your visit. Call, e-mail, or meet virtually with the teacher both now and again in the weeks prior to your visit. Share your ideas for the presentation and discuss their feasibility. Learn about students' prior knowledge and interests. Discover what they will be learning at the time of your visit. Discuss any technology needs and safety issues relative to your planned activities or materials. Find out about logistics of virtually visiting the school: platform, any forms to complete prior to your visit, etc.

Build an age- and level-appropriate lesson. Be mindful to limit use of jargon and to build on the students' prior knowledge. Ask the teacher what students should already know. Incorporate activities, demonstrations, discussions, Q&As, and active/collaborative learning methods rather than lecturing. See our sample lesson and tips sheet below for ideas and guidelines.

Prepare the teacher and students. 1-2 weeks before your visit, send your lesson materials or an outline of your lesson to the teacher. If appropriate, send materials for the students to engage with before your visit.

DURING THE VISIT

Be friendly and respectful to the students. People who are used to presenting in a professional context tend to take a more formal tone. Instead, try to be casual, friendly, and accessible to the kids. We want them to see you as a 'real person'!

Put your visit in context. Share that you are visiting as part of the Atlanta Science Festival, and direct students to check out AtlantaScienceFestival.org for info on other awesome events they could attend.

Tell your story. Students will relate to you more if they get to know you as a person. Feel free to tell personal anecdotes that are relevant to how you chose your career. In particular, consider sharing obstacles you overcame or are continuing to face.

Present the challenges. The major goal of this initiative is for students to hear about the unsolved problems and unanswered questions in your field, and to imagine themselves addressing those challenges with STEM understanding and careers.

Encourage participation. Engage students by soliciting their feedback from time to time. Make use of the chat function in the online platforms, for the more reserved students. Make sure to leave openings for their questions.

The teacher is there to help. They may jump in to help manage disruptive behavior, generate discussion, or encourage questions. Allow them to help. Also feel free to ask them for feedback or help during a break in the lesson.

AFTER THE VISIT

Keep in touch. Consider inviting the teacher to e-mail student questions to you after the presentation, in case students want more information or a question occurs to them later.

Complete evaluations. Your feedback will help us to develop a more effective program in the future. Please help us by completing the online survey we will send to you. It is important to us to have an accurate count of the number of students you reach.

Tips and Ideas for a Successful Classroom Visit

Know your audience. Presentations fail and succeed depending on how well they target their audience. Keep the vocabulary you use and concepts you discuss within the students' understanding. When in doubt, ask the teacher for help.

Be comfortable. This is not a professional venue, so there's no need to dress and act formally. Dress neatly in everyday clothes. Tell personal stories. We want the students to see that you're a real person!

Be interactive. Incorporate student interaction into your presentation. This may mean coming up with hands-on activities that get the students up and moving, but may be as simple as working questions into your talk early and often. Use discussion questions rather than pop-quiz questions. Your visit should be more of a conversation than a lecture!

Move around. You will better hold the students' attention if you move around the classroom. Don't be afraid to leave the front of the classroom and walk the aisles.

Highlight key concepts. Think of a few key points you want the students to take away from your presentation and find a way to highlight them. This may mean providing handouts or simply writing key points on the whiteboard.

Make it relatable. Think back to when you were the students' age. What would have piqued your interest? Find connections between your field and the students' lives and incorporate them into your presentation. They should be able to understand why you do what you do and, ideally, imagine themselves in your role.

Give them a path. Tell students what they should do if they're interested in a career like yours. Be age-appropriate in the level of detail. Are there relevant classes, internships, or summer experiences? Extracurricular or volunteer opportunities?

Use PowerPoint thoughtfully. PowerPoint is great for presenting data or images and videos that you could never recreate in a chalkboard drawing. But avoid text-heavy slides.

Ask for help. Even with adequate preparation, presentations can sometimes fall flat. If you're not sure your message is getting across, ask the teacher for feedback during a quiet moment. They may have ideas for last-minute tweaks that could make a huge difference in the impact of your visit.

Have fun! A thoughtfully prepared visit will be fun for students and presenters alike.

Some activities you might incorporate into your visit:

- Demonstrate an instrument/tool you use on a daily basis.
- Show a video that explains or demonstrates what you or your company/organization do.
- Show pictures of your work site, your team members, or your job in action.
- Tell your story with photos. Show pictures of yourself when you were the students' age. If your course of study (college or trade) was relevant to your current job, show pictures of the campus or lab.
- Show sample products or specimens related to what you do. Pass them around if appropriate.
- After the students have had a chance to hear about your work, take their questions so you can focus in on the concepts that most interest them.
- Put the students in your shoes. Find a way to replicate one of your job functions in the classroom and have the students try it out.
- Run an experiment. If you work in consumer goods, show some samples and have the students rate them on several dimensions. If you work in an academic lab, adapt or replicate part of an experiment in the classroom.

Some questions you might answer in your presentation:

- How did you become interested in your field?
- What specific experiences helped you decide on this career path?
- What about your personality and interests makes you a good fit for the job you have?
- When you were the students' age, what did you think about science/math? Did you like it? Dislike it?
- How did you prepare for your career? What kinds of skills did you acquire and how did you learn them?
- What kinds of things do you do on a day-to-day basis? Does your job require a lot of interaction with people? With machines and computers?
- What excites you about your job?
- What is the most rewarding thing about your job?
- What tools do you use on the job?
- *What are the key mathematic/scientific concepts that underlie your work? Are there basic ideas that the students are studying that you use in your work?*
- What is the job outlook like in your field? What kinds of jobs will there be demand for in the future?
- *What kinds of problems have people in your field solved in the past?*
- *What kinds of challenges do you hope people in your field will address in the coming years?*
- What do you hope to be doing/working on in 5 years? 10 years?
- How can students best prepare themselves to work in your field?

Sample Lesson Outline

Introduction

Give the students your name and the company/organization you represent. Share that you are here as part of the Atlanta Science Festival, and direct them to check out AtlantaScienceFestival.org for info on other awesome events they could attend. Try to be friendly, relaxed, and approachable. Dress neatly but in normal, everyday clothes – the kids should be able to imagine themselves in your role! Hit the highlights of how you ended up in your career; details of your postgraduate training and previous work experience are probably not appropriate for students younger than high school age. Tell them about your past and use personal anecdotes to get the point across. Stories help the students connect to you, and the more they connect with you, the more they will be engaged in the rest of your talk and activities.

What Do You Do?

Describe your job and its context within your workplace. Share 1 or 2 significant projects and their importance to the industry/field of study. Rather than just telling them what you do, show them with videos, images, specimens, samples, demonstrations, and/or hands-on activities.

Hands-on Activity

Get the students involved and show them up close what your job involves. Give them a chance to simulate a small part of what you do and to feel whether your job is something they would want to do. Consider what materials students may have access to.

What Are the Challenges Facing Your Field?

Share the major problems being addressed in your field. What are the unanswered questions and unsolved problems of the future? Find out what students think about the challenges our community will face in the future and how advances in science and technology will help us address them.

Q & A

Leave at least 5 minutes to take questions from the students. This is also when you could let them know how they can get in touch with you (through their teacher) if you're interested in entertaining questions after the fact.

Give Them a Path

Before you leave, be sure to let the students know how they can take steps toward your career, if it's something they're interested in. Make your suggestions as detailed as is age-appropriate. For the younger set: Are there camps for kids who are interested in your field? For high-school students: What classes could they start taking? What course of study would they want to take up beyond graduation?