# STEM Career Engagement Guide

*Collaborating with STEM Professionals in the Elementary Classroom*

VOYA FINANCIAL

## *So, You Want to Engage Elementary Students in Thinking about STEM Careers?*

STEM is more than an acronym for science, technology, engineering, and math. It is an approach to the world and a mindset grounded in innovation, curiosity, problem-solving, and critical thinking. STEM careers are the fastest growing professional field that our students will experience as future employees.

For elementary children, STEM often sparks curiosity through both structured and unstructured play time. Structured activities might include hands-on science and engineering challenges, such as planting seeds or designing Rube Goldberg machines, or technology activities such as introductory coding. In unstructured play, such as blowing bubbles, flying kites, or playing basketball, children explore physics concepts. And, with imaginative play, such as creating a pretend ice cream shop and making change for customers, there are opportunities to explore financial literacy concepts. STEM learning is all around today's students. But how do we use this learning to impact how students view themselves in the future? We want our students to develop STEM identities, to see themselves as mathematicians or scientists. Through this lens, they will feel empowered and excited to take on more STEM explorations. A large component of helping shape STEM identity is through connections and meaningful interactions with STEM professionals.

## *Planning for STEM Career Discussion Success*

Part of fostering a STEM identity in elementary students includes inviting STEM professionals into the classroom either virtually or in-person. Be intentional about the timing to host a speaker. Incorporating a speaker at the beginning, middle, or end of a unit provides a different benefit. A guest speaker can be an exciting kickoff for introducing new material. In the middle of a unit, STEM professionals can enhance student work, conduct research, and dive deeper into concepts. They can even have a continuous conversation loop with students throughout the project using tools such as Flipgrid or other video messaging tools. At the end of a unit, a guest speaker can provide closure and even help with providing feedback to authentic assessments.

### Finding STEM Professionals

Finding STEM Professionals to speak with students can seem daunting. First, consider your own personal network. What STEM professionals do you know? Perhaps these are former students, family members, parents, representatives of local companies, or even a college professor you could call upon. There are also many online resources that connect STEM professionals to classrooms. Skype a Scientist, Google Computer Science Ignite Experience, Amazon Future Engineer Class Chats, Connect to National Park Rangers,



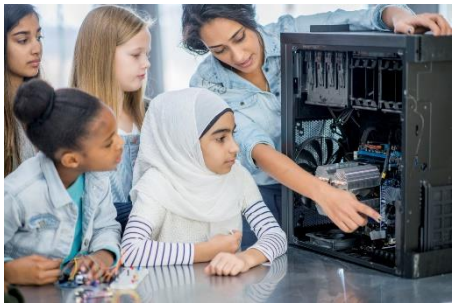
Women in Science and Engineering, and Edutainment Learning provide direct classroom speaker opportunities at no cost. Consider local universities and colleges for connections to STEM professionals who might come to your classroom or provide virtual tours of their workspaces or laboratories.

When considering whom to invite into your classroom, prioritize opportunities for speakers who provide diverse representation for your students. There is a great need for students of all backgrounds to see and hear from role models who look like them from a variety of STEM fields, in order to be able to see that a particular career path could be for them.

When contacting possible speakers, a simple introduction along with a quick ask is a great way to gauge their interest. (Click here for a sample script.) This invitation could be an email, a phone call, or a social media message through Facebook, Twitter, or LinkedIn. Share links back to your own social media profiles or school websites to provide additional context of your request.

## Preparing your STEM Professional for a Virtual or In-Person Visit.

Once you have identified a STEM professional to visit, it is important to prepare them - their time is valuable and you want to intentionally welcome them into your learning space. If they are coming in-person, you will first want to check your district policy for having visitors in the building. Next, you will want to make visitors aware of building-specific logistics. Have a checklist for speakers with details on presentation time slots, your contact information, room number, etc. Virtual speakers will need confirmation on video conference platforms, time zones, and any expectations you have of them. Will you ask for a brief presentation, a tour of their workspace, or will this be a simple Q&A conversation? It is also a good rule of thumb when prepping for virtual experiences to ask if the STEM professional would like to do a test call. Here are some additional tips for setting up your classroom for a virtual call.



It's also very important to not assume STEM professionals know how to interact with young students. STEM professionals are great at their day jobs, but they may need a few tips to making connections with elementary school students. Outline the intended goals ahead of time. Encourage interactive moments with students.

Ask the speaker to prepare a visual display of artifacts or images that can be shared with students to engage their brains in the presentation. For example, the speaker may hold up a job-specific tool and ask students, "Take a look at the shape of this tool. What does it remind you of? Where do you think I would use in my job? What does it do?" Prompting responses from students provides more engagement and curiosity rather than small lectures. Remind the speaker that it is okay to share personal stories, passions, and career pathways with the students to help make the experience more

relatable and authentic for the students. This might include helping the STEM professional understand more about the culture of the students that they will be meeting.

Because STEM Professionals may not be comfortable speaking to younger students, they may need you to help facilitate timing, questions, and knowing when more clarity is required. Some topics may prove challenging to explain to younger students, so encourage the speaker to break the information down into smaller chunks for better comprehension. A suggested, engaging presentation format for elementary students follows:

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| **2 min: Brief welcome and introduction -** This is a great opportunity for classroom greeters to take a leadership role and introduce the STEM professional to the class |
| **5-7 min: Presentation Part 1 -** Encourage at least one brief interactive element such as, "Can you guess how I would use this instrument?" or "Take a look at this picture of where I work. What do you notice?". |
| **2-3 min: Short student Q&A reflecting on Presentation Part 1 -** Take this opportunity to ask clarifying questions |
| **5-7 min: Presentation Part 2 -** The speaker should continue with one or two interactive elements. |
| **2-3 min: Short student Q&A reflecting on Presentation Part 2 or related activities -** take this opportunity to ask more clarifying questions or do a short activity. |
| **5-7 min: Presentation Part 3 -** The speaker should continue with one or two interactive elements or activity. |
| **10 min: Open Q&A -** If students' pre-prepared questions have not been answered during the presentation, this is the perfect time to ask them. |
| **3 min: Final thoughts and thank you - C**elebrate the excellent learning that was done together. |

## Student Preparation

Providing background context and gathering student curiosities about a STEM professional's work and life sets the stage for a positive and interactive experience. Consider using a Know, Wonder, Learn (KWL) chart or asking students to draw what they imagine the STEM professional's workplace and uniform might look like. What instruments and tools might that person use? Host an "I Wonder…" session with your class. "I wonder" statements are whatever the kids are wondering about—whatever connections are happening in their heads as they learn. What do they wonder about this career? About the STEM professional as a person? Another tip is to discuss respectful speaking and listening behaviors. Classroom meetings offer another great opportunity to model and practice good listening strategies such as looking the speaker in the eye, and listening completely before responding. Finally, consider leadership roles for students before the STEM professional visits the classroom. Classroom jobs such as greeters, questioners, and photographers can provide a welcoming and interactive experience for both the students and the speaker.



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## *Hosting the STEM Professional Discussion*

Your speaker and students are ready for the big event. Tables and chairs are in place, the STEM professional artifacts and photographs are prepared, and the students are ready to ask their questions. The next step is considering how to engage students during the presentation. Start with a 3-2-1 graphic organizer or note catcher (student sample) with "3 new things I learned", "2 things I found interesting", and "1 question I still have". Consider a "Bingo" card with specific ideas, concepts, or vocabulary terms they might hear during the presentation, or design an "I Discovered Scavenger Hunt" of things the STEM Professional might share such as what their schooling was like, a funny story about their job, or something that surprised them. Planning this with your guest in advance may make it more fun for all. (Click here for more student engagement techniques.)

As the discussion ends, this is a perfect opportunity to celebrate your time together with a class photo, whether the STEM professional visited in-person or virtually. This image is shared easily with your speaker as a memento and can be posted on social media or school newsletter as a celebration of learning. In summary, consider this handy checklist for hosting your speaker.

## *Honoring the Collaboration and Keeping the Connection*

Reflection activities are critical to any STEM career presentation and can be completed either as a whole class discussion or through individual student reflections. Digital reflection tools include Parlay, Flip, or Jamboard. Students can use journaling to reflect on their learning and feedback, track various STEM professional experiences, or share how they felt about listening to the speakers. What would they enjoy about this job? What might be challenging? What questions might they still have about this career? Here are some sample STEM writing prompts from JournalBuddies.com. Give students the opportunity to share their reflections with peers through in-school visual displays, debriefing talks with the building administrator, or home discussions.

Finally, consider gifting a special memento from your classroom to your STEM professional. This could be school swag, a framed picture of your class photo, or even a short photo montage with students holding up speech bubbles with their favorite facts they learned during their time with the speaker. These things strengthen relationships with your STEM professionals and encourage future collaborations. For more great ideas and additional support, be sure to view the middle and high school STEM Career Engagement Guides.

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