SAE INTERNATIONAL®

sae.org/learn/education/

A WORLD IN MOTION® VOLUNTEER GUIDE

Since 1990, the AWIM program has expanded from a single collection of teacher lesson plans into a series of age-appropriate, hands-on "Challenges." Volunteering in an AWIM classroom can be a highly rewarding experience for you, the students and the teacher. Not only will you have fun working with young people on an engaging activity, you will also have the satisfaction of contributing to and sharing in their discoveries and success.

ABOUT AWIM

AWIM provides PreK-8 teachers with a comprehensive STEM solution. Each AWIM Challenge curriculum comes complete with a teacher's manual and kit of required materials. The manuals simplify planning for teachers by aligning to national standards and by outlining hands-on and flexible lesson plans. AWIM builds bridges between corporations and classrooms by giving teachers, volunteers, and students the opportunity to work and learn together.

VOLUNTEERING IN THE CLASSROOM

A key element of A World In Motion® is the use of industry volunteers in the classroom. Volunteers serve as positive role models and provide relevant "real world" examples to students. Volunteers who are engineers are especially valuable as they can provide students with an awareness of the engineering profession while serving as an in-classroom resource for teachers.

Whether you can only visit the class once or twice, or you are able to visit more frequently, your presence in the classroom will make a positive impact and improve the AWIM experience for students.

General Guidelines for Volunteers

There are many ways you can contribute during your classroom visit(s). The following guidelines can help you be confident and effective in the classroom:

- Let the teacher introduce you to the class. Give the teacher and students information that will let them get to know you as a person and as a professional.
- Invite students to ask questions. If necessary, provide suggestions for questions that you think might interest them.
- Ask the teacher about the math and science level of the class so that you can speak at an appropriate level and not refer to concepts that will be unfamiliar to students.
- If possible, try to visit during the final presentation. This event provides an opportunity for you to give students positive feedback and recognition for their work. An audience of invited guests will make the presentations more significant to the students.

Suggestions for Sharing Your Work

To help students put their challenges in the larger context of engineering, the teacher may ask you to do a short presentation at the beginning or end of the unit. Depending on your background and the needs of the teacher and students, you may want to do some of the following:

- Talk with the students about your professional work. Bring demonstrations, pictures, or samples of your work, if possible.
- Relate what they are doing to what an engineer (or science professional) does. Help students recognize that an engineer's work is highly creative, drawing upon information from math, science, and other fields to create successful designs.
- Discuss how teamwork is important in today's work environment. Give examples of how members of a design team often have diverse backgrounds and how they are all important in making a design successful.
- Discuss the importance of keeping design logs and documenting all efforts, whether or not they are successful. If appropriate, bring in examples of your work records.
- Discuss how design specifications and drawings are used. Show examples from your own work, if appropriate.
- Describe some of the work that goes into successful designs, such as research, testing, prototyping and creative thinking.

Suggestions for Supporting Students' Work

You can have a lot of fun when you assist students during a build-and-test activity. An extra set of hands is always useful during experimental trials. Here are some tips for facilitating a build-and-test activity:

- Try not to be overly concerned about the correctness or precision of students' efforts. Instead, encourage their enthusiasm and help them generate more ideas.
- Be careful not to build for the students, or tell them what to do. When they ask, "How do I do this?" ask them, "Where would you start?" or "What materials might you use?" Suggest materials or techniques, or make your own prototype to show.
- When students make mistakes, help them make sense of what went wrong by asking thought-provoking questions about possible solutions.
- Be interested in what they are doing and provide a sounding board for their ideas. Give students an opportunity to develop and express their thoughts.
- Support them in conducting experiments to test hypotheses.

Logistics for Successful Volunteering

To ensure that your own experience will be enjoyable and productive, consider the following managerial and organizational details:

- Find out how the teacher prefers to communicate with you. If you rely on phone calls, be sure to exchange work and/or home numbers and best times to call. If you plan to communicate by e-mail, let each other know how often you check your mail.
- Get directions to the school, information on where to park your car and instructions on the school's procedure for signing in.
- Review the description of the challenge the class will be doing and become familiar with the content of the unit as much as possible.
- Leave sufficient time to meet or talk with the teacher to go over the curriculum and proposed scheduling.
- Schedule your visits in advance and check with the teacher a day or two ahead of each planned visit to confirm your arrangements.

THE ENGINEERING DESIGN EXPERIENCE

A unique feature of the AWIM program is the use of a process employed by engineers. The design process that students undertake includes the following five phases:

Set Goals

Students are introduced to a challenge scenario. They review a fictitious toy company's letter, discuss the requirements, and share ideas about how to solve the problem. Students begin to work in teams and record their work in design logs.

Build Knowledge

Students first build a model and figure out how it works. In the next several activities, teams vary factors on the prototype, record observations and discuss results. They move from informal explorations to controlled experiments and make performance predictions based on graphs and tables of results.

Design

Student teams design their own toy to meet the requirements stated in the toy company's letter. They determine the values of variables, plan construction, and predict performance based on data collected in previous activities.

Build and Test

Students build and test their design to determine how well it meets the performance criteria. They adjust their designs as needed to enhance performance.

Present

Student teams give presentations of their work to an audience.