

RESET Maximizing Your Volunteer Experience

RESET volunteers love sharing what they know with children, and this is one reason the program continues to be so popular with schools and students. Although we certainly want children to learn something new and improve their academic performance, we mostly want them to have exciting early engagements with hands-on STEM learning. RESET may be the first time many of these students have had an enjoyable, non-threatening experience with science and math. You have the opportunity to change their negative attitudes toward these subjects forever. Have FUN!

Before You Arrive

- Before your classroom visit, try a dress rehearsal or “dry run” of your experiment or activity (especially if it is your first time) with a family member, friend or a child who is the same age as your students.
- Check your equipment before your class visit to ensure it is in working condition. Replenish expendable supplies.
- Use diagrams on the digital board, handouts, or slides (if a projector is available) that are prepared in advance. You and the teacher will work out the logistics. Sometimes classroom aides are available to help set up the experiment “props” and distribute materials.
- It is often helpful to provide the teacher in advance with a vocabulary list of terms that you will be using during the experiment. Remember, simple words such as *resistance*, *software* and *averages*, as well as more complicated terms such as *innoculation*, *density*, and *polymer*, may be foreign to your students. Try to limit the number of unfamiliar terms you introduce to about 4 to 6 per session. If you send new terms to your teacher area of time, many will review them with the children before your session.
- Provide the students with pocket folders in which they can place handouts and keep data and information about their experiments. It

helps to ask the students to write their names in large letters on the front of the folders and to keep them in front of them as they do the experiments so you can speak to individual students by name. RESET's Classroom Teaching Advisor emphasizes that "the importance of calling students by name is immense."

First Steps

Volunteers and teachers report positive experiences with the following approaches:

- Open up the class with a few minutes of informal conversation about current STEM developments, a student's personal interest, or a question related to last week's exercise.
- Start each class with a five-minute icebreaker activity.
- Review the previous sessions' vocabulary terms and introduce them in the following session.
- Break the class into small groups or assign tasks to pairs of students.
- Before you begin, tell the students what the objective of the session is and the kinds of activities they will be undertaking. Hold up key materials they will be using for them to see. Children feel more secure when they have a clear sense of direction and what the expectations are. Also, if your experiment involves unexpected noises, flashes of light, or unusual smells, consult with the teacher before your visit and let the children know before starting. Some children may be disturbed by such experiences. Without "giving away the punch line," try to keep the learning environment relaxed and trusting.
- If possible, avoid distributing materials to students and groups until it is time to start using them, as students' attention will shift away from you to the interesting objects in front of them.
- Assign students specific roles during an experiment. (This gets them accustomed to behaving and thinking like scientists.) For example: one volunteer who conducts an experiment on drawing polymer fibers assigns one student to mix the solution, another student to draw the fiber, and a third to observe and record the results.
- Make sure you take time during your program to tell your students what initially sparked your interest in science and math and what kinds of

STEM advances and inventions occurred when you were their age. Also, describe the kind of education you had and the work that you and others in your field do on the job. Students develop a strong connection with their volunteers over the course of a RESET program, and sharing such information enhances their image of you as a role model.

Positive Interactions

- Use non-verbal cues of encouragement. Smile expectantly, make eye contact, nod while a student is talking, look relaxed and interested, and address students by name.
- Pose questions that are designed to elicit a variety of brainstorming responses, rather than close-ended answers. For example, you might ask: “What is light and where does it come from?” Or “What are some of the ways a bird adapts to its environment?” Or “How do we use statistics in daily life?” Or “What are ways computers are useful in our lives?”
- Casually stand next to students who don’t typically contribute, as it will often draw them out. Make sure you reward an infrequent contributor with a warm smile or spoken affirmation. The most intelligent students are often the most quiet. They may need a little more time to feel comfortable with you.
- Encourage questions and be positive in your answers.
- Comment affirmatively about a student’s contribution, even if it’s the wrong answer. Many answers show good critical thinking and imagination, although they may be “technically” incorrect. Reinforce the positive aspects of these answers, and let them know it’s ok to be wrong. It’s your job to guide, rather than dictate.
- Correct wrong answers tactfully. Instead of reacting negatively to an incorrect response, provide hints, suggestions, or follow-up questions that will enable students to correct their own answers and continue to learn.
- Provide clear directions and ask questions to gauge whether you are expressing yourself in a manner that the students understand.
- You are a role model, so always demonstrate good safety practices, fairness, patience, and attentiveness. When children see this behavior in you, they will be encouraged to exhibit it themselves.

A Few More Teaching Tips

- To better connect parents and guardians to the child's hands-on science/math program that you are providing, RESET encourages volunteers to provide each child with materials for one activity to take home (at a cost of \$5.00 or less per student, reimbursed by RESET). Parental/Guardian support helps RESET so please include a note with RESET's web site address with the take-home items.
- Limit your own remarks and avoid the temptation to turn a discussion into a lecture. Try to have a dialogue with the students often and have them spend as much time as possible in the experimental activities.
- When students are caught up in the excitement of an activity, it can be challenging to quiet things down so you can make a point or move forward. Try a technique that requires them to shift their attention to you. Perhaps start counting to 10 forwards or backwards and have all students join you in the counting. When they reach ten (or 0), quiet is expected. Rhythmic clapping, ringing a bell, and flicking a light switch are also excellent ways of getting students' attention. Teachers often use a standard quieting technique that they will share with you.
- At the end of your session, suggest that the children think about the experiment they have done and write down questions that you can discuss together at your next meeting. Many classrooms have rugs where the children sit as a large group, which provides a good set-up for your end-of-class discussion.
- When a student answers a question, remind others in the class to be quiet and listen. Let the students know you will be asking other individuals to repeat another student's correct response, and do that regularly to promote their paying attention to questions and answers.
- Relate the experiment underway to things that students will recognize in their everyday lives.
- The best lessons are those that are inquiry-based, hands on, and get everyone involved! Try to ensure that each student in the class has tasks to perform during the session. Numbers can be assigned to each student in a group (perhaps by distributing them on index cards) and tasks can be assigned by number. Even having a student from each group come up to

you and take back materials or handouts to distribute to others in their group is an activity many like to do.

- Try showing a task to one student from each group and have them return to their group and show the others how to do it. Peer teaching is a great way to learn.
- Write a student's answers on the board or refer back to a student's correct answer later in the class.
- Reinforce the idea that there are many things that scientists, technologists, engineers, and mathematicians don't know, and that their jobs often involve trying to find the answers to such things not yet known. Note that science experiments help with that learning, even when they don't always turn out the way we thought they would. Be open about saying that you don't know the answer to a question; instead, talk about how one might go about finding the answer. One advantage of this is that it shows teachers that it's fine to respond to a science question with: "I don't know." Some teachers are science-averse because they feel they need to have the answers to all possible questions students may ask. Those without a strong science background may also find the idea of having a highly credentialed STEM professional in their classroom somewhat daunting—let them know there's still a lot we all can learn.
- Illustrate with stories and amusing anecdotes—children love them!
- Talk to students in the same way you would talk to your own child or a niece, nephew or grandchild. If you are unsure whether you are talking above or below your students, ask your assigned teacher for pointers. The teacher you work with can help you adjust your vocabulary so that it is appropriate to the age group you are working with.

In Conclusion

- End the class session with a thought-provoking question to think about before you meet with them again. You might make that question the focus of your next week's icebreaker. Make sure this is a fun and interesting question that they might discuss with their family and classmates afterwards.

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