

TEACHING SCIENCE TO YOUNGER AUDIENCES



TIPS & TRICKS

Engage with students

Promote curiosity by asking questions. Provide opportunities for students to share and try not to shut down wrong answers rather probe for understanding.

Promote confidence by having assistants. Make students part of the action by incorporating them into demonstrations/activities.

Give them choices. Involve students by letting them make some decisions on what happens next.

Help them process and understand the activity. Allow them to share their thoughts, feelings and reactions with each other. Reflecting on questions enables students to absorb, process and articulate their understanding.

Be authentic. Unless it comes naturally, don't worry about being funny. Kids will respond to your enthusiasm and passion for science more than corny jokes!

Meet them on their level. Don't tower over them, but adjust so that you can make eye contact on their level.

Answer their questions. You don't have to have all the answers so model a love of learning and curiosity. "That's a really good question! I haven't thought about that before" or "I don't know the answer, what do you think?"

Translating the science

Know your audience. Talk to students of similar ages - what they are learning in school? Research curriculum guidelines to learn about what is covered in their grade.

Consider language and remove jargon. Don't use terms/phrases that students are unfamiliar with and if you do, thoroughly define it and check for understanding.

Imagine you are in the audience. What things do these students already know and what needs to be explained. Provide enough context when explaining something that is crucial to their understanding.

Come up with a catchy title. Grab their attention with a fun, kid-friendly title. Ex. Healing the earth with poop! Plankton: nature's largest lungs!

Practice teaching it. Find someone you can practise your activity with and ask them to tell you when something is unclear or confusing and make adjustments.

Be a storyteller. Use metaphors, analogies and stories to help make abstract concepts understandable. Ex. A cell is like a factory. The membrane is the shipping department, the nucleus is the executive department and the cytoplasm is the factory where products are assembled, finished and shipped.

Use visuals. Pictures, videos, drawings or models. Visual representations could include the chemical model of an atom, a solar system model, or a topographic globe and can allow you to scale up or scale down concepts.

Make the content approachable. Scale down ideas to the most basic concepts. These students shouldn't need a PhD to understand what you're talking about. Ex. you can talk about atoms as the basic unit of matter without going into the quantum mechanical model, quirks, quarks and bosons.

Incorporate kinesthetic modelling. Have students use their bodies/props to act out a concept. Ex. Pool noodles to show chromosomes activity during mitosis.

Check for understanding. A sea of blank stares or fidgeting could be signs that students aren't comprehending what you're talking about. Stop and ask a question. Repeat often and as necessary to meet student needs.

Being mindful of some EDI teaching strategies

How do you structure a learning environment to ensure that everyone feels comfortable, safe and welcomed? Here are a few strategies that encourage equity, diversity and inclusion in a learning space.

Write instructions on a board or slide. This supports all students but in particular those who have a hearing impairment; who require a bit more time to process instructions; or have trouble keeping track of instructions.

Learn their names. This is a simple way to create a welcoming space. Use name tags or a name card tent so that the instructor and other students can learn and call each other by name.

Incorporate time to "think-pair-share". Introduce a topic/question, pair up students to discuss and ask one to share when the class regroups. This gives quieter students and those who need more time to process, the opportunity to think, develop and articulate ideas before they have to share in the large group.

Press pause. Leave 3 - 5 seconds after you ask a question before asking for answers. This allows for critical neural processing and gives students a chance to think, develop and articulate their ideas before being asked to share.

Connect to impact and social change. Students want to impact their community and girls in particular choose careers that address social justice issues. Think about the issues that concern your audience, think about the community they come from, and where they live. Connect your teaching to what is relevant to them.

Avoid gendered language. Using 'boys and girls' or 'guys', can feel exclusive to gender diverse students. Try using more gender neutral terms like "students" 'folks' 'y'all' 'friends' 'future leaders of the world' etc. Be creative.



Additional Resources
Scan code for additional resources

WISEST's mission is to advance diversity while empowering women in STEM. For more information, visit: www.uab.ca/wisest.

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