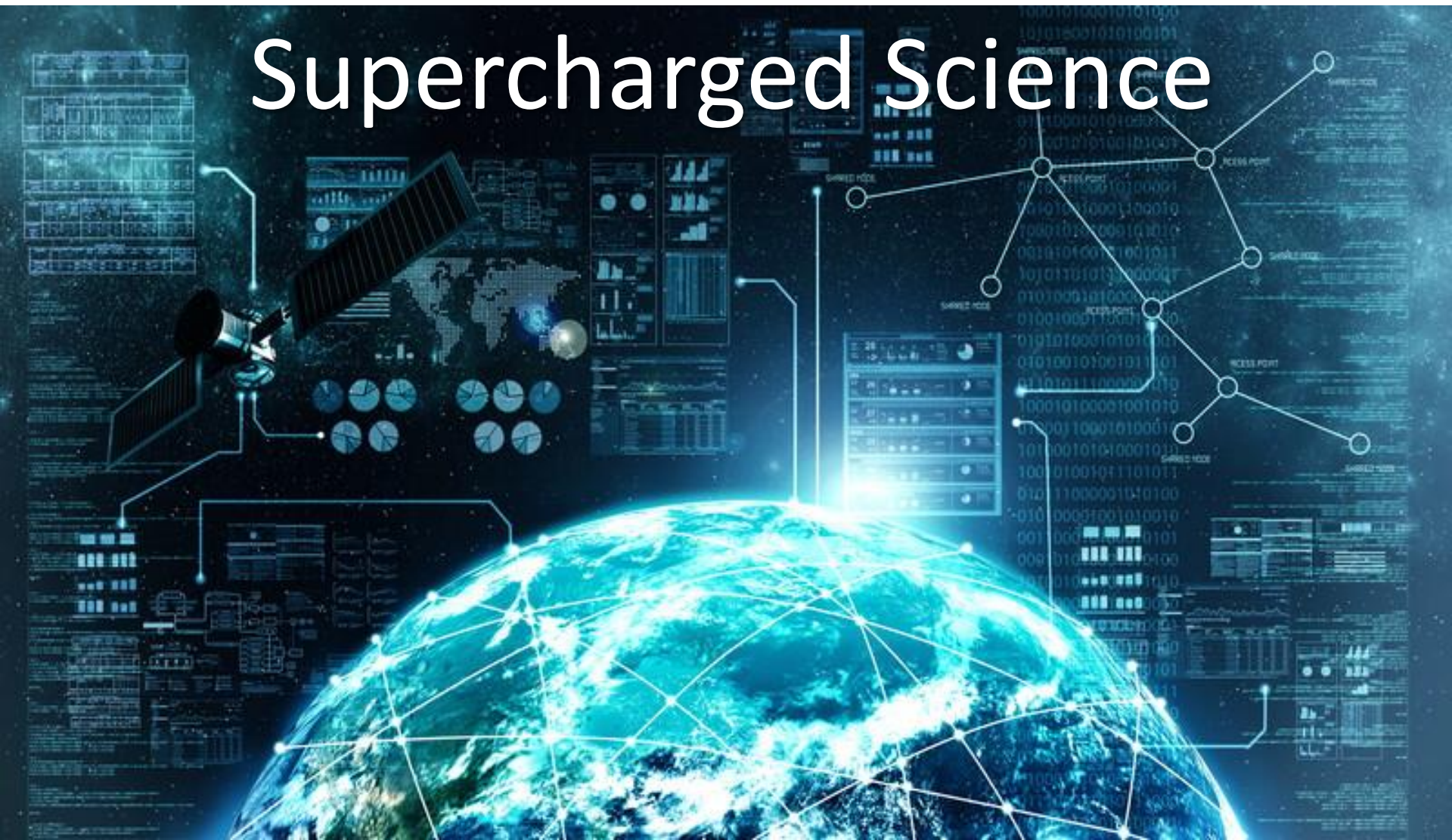


Online Science Curriculum

Supercharged Science

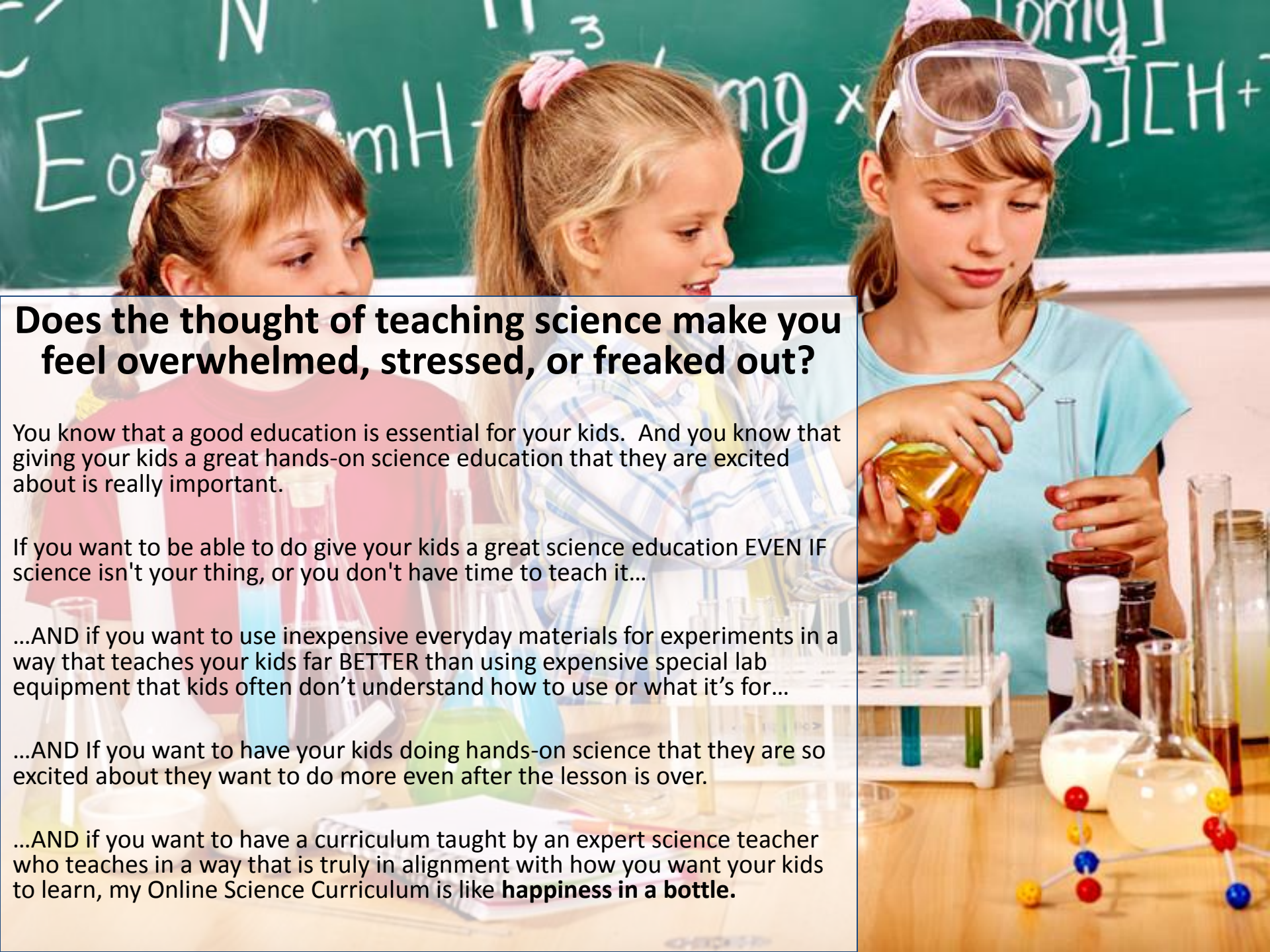


Spend less time planning, more time experimenting and becoming a *REAL* Scientist...

Becoming a part of my online e-Science Curriculum Program gives you everything you need to ignite creativity and innovation in your curriculum by engaging and inspiring your students and ending science teacher overwhelm forever.

(...even if you don't have a science background, you worry that you don't know enough... and you feel like you never have enough time!)

"YOUR LESSONS HAVE INSPIRED MY CHILDREN TO THINK FOR THEMSELVES!" *SOFIA*



Does the thought of teaching science make you feel overwhelmed, stressed, or freaked out?

You know that a good education is essential for your kids. And you know that giving your kids a great hands-on science education that they are excited about is really important.

If you want to be able to do give your kids a great science education EVEN IF science isn't your thing, or you don't have time to teach it...

...AND if you want to use inexpensive everyday materials for experiments in a way that teaches your kids far BETTER than using expensive special lab equipment that kids often don't understand how to use or what it's for...

...AND If you want to have your kids doing hands-on science that they are so excited about they want to do more even after the lesson is over.

...AND if you want to have a curriculum taught by an expert science teacher who teaches in a way that is truly in alignment with how you want your kids to learn, my Online Science Curriculum is like **happiness in a bottle**.

Why is teaching science so hard?



Most teachers focus on memorizing facts and figures. But science isn't a laundry list of things to get done.

Science is about learning how to think. It's about learning how to be curious, ask the right questions and figure out your own answers.

And you can't learn that by just reading a textbook.

Biggest Complaints...!

Do any of these sound familiar?

- I don't have time to teach science!
- It's too expensive!! (We're on a tight budget.)
- Science isn't my thing.
- I don't have the background to teach it.
- It's too messy! (You did *that* in the *house*?!?)

It's hard to inspire and engage kids when you're stretched thin and overwhelmed.

I've been there myself. But it doesn't have to be this way!

I'm Aurora Lipper, founder of Supercharged Science and a mom just like you.

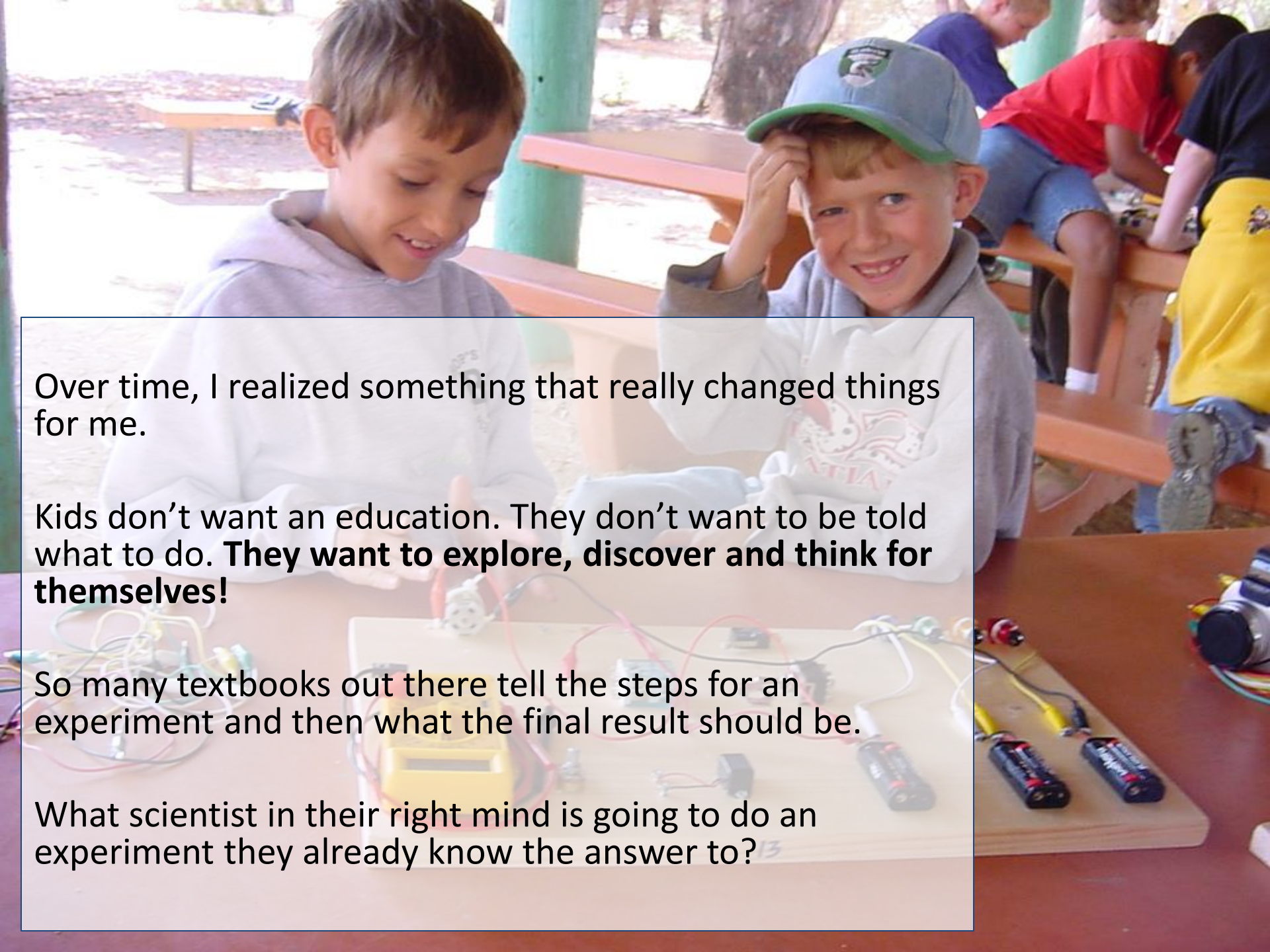
After working for NASA, being a mechanical engineering instructor at the university level, and later teaching science classes to K-12 kids for over 15 years, I know how kids think and learn. I also know what they need to know and understand before they hit college. I've personally worked with tens of thousands of kids over the past two decades, inspiring and educating them to become active in creating their own bright futures.

When I first got started as a teacher, I was definitely thrown in the deep end. It was up to me to figure out what to teach, how to teach it, what projects to build, and how to figure out if they'd learned anything at all.

I put a lot of pressure on myself to be the best possible teacher for my students.

A lot of my science experiments that I had stayed up late planning, researching and preparing were total flops.





Over time, I realized something that really changed things for me.

Kids don't want an education. They don't want to be told what to do. **They want to explore, discover and think for themselves!**

So many textbooks out there tell the steps for an experiment and then what the final result should be.

What scientist in their right mind is going to do an experiment they already know the answer to?



I began teaching physics by wearing roller skates into the (university!) classrooms. We shut our books and analyzed the roof trusses above our heads. We made radios from soda bottles and old telephone receivers, and created laser light shows from Tupperware. We were *doing* science, not reading about it.

I experimented, tested and tweaked my lessons to teach students how to think, ask the right questions, and express their creativity and curiosity by designing their own experiments to solve problems.

My students couldn't *wait* to do their science lessons!

They explored science by getting messy, using materials they already had handy around them, and ended up having multiple *ah-HA!* moments in the classroom in the same day.

They raced home and proudly taught their parents their science lessons!

I finally figured out how to do this with students worldwide through my online program, so you can finally stop wasting energy on worrying about what to teach next or trying to reinvent the wheel every week. Instead, your role as a teacher is to get focused on getting to know your students through their science explorations.

It's *my* job to handle the technical stuff. You just collect the supplies (which are easy household stuff), round up the scientists, and watch the innovation unfold.

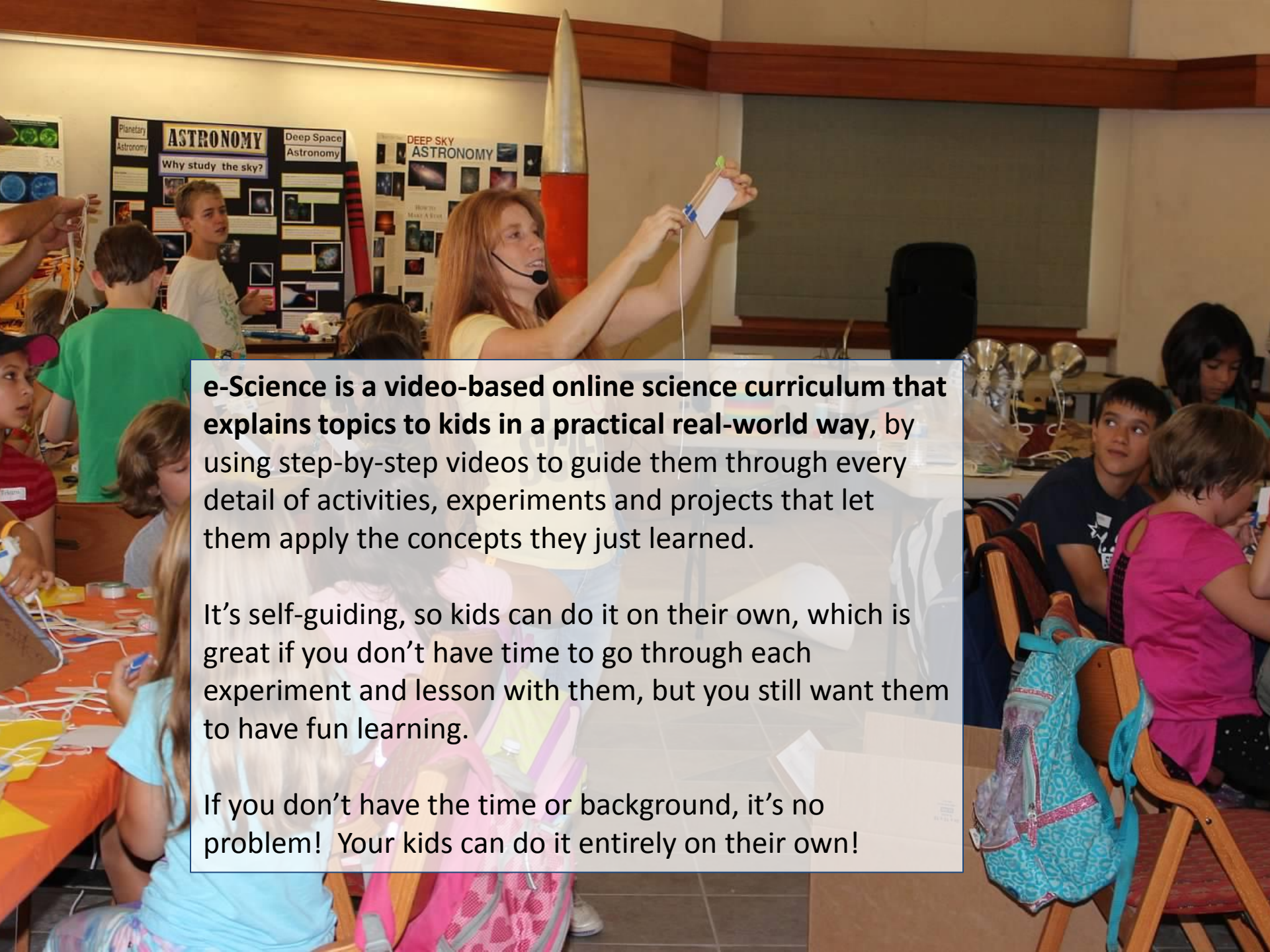
You can **transform your student's science education**

from *overwhelming* to *engaging*,

without spending hours of searching
for the perfect lessons for your student.



With my online e-Science curriculum – an affordable monthly membership created for K-12 students –
I've already done all the hard work for you.



e-Science is a video-based online science curriculum that explains topics to kids in a practical real-world way, by using step-by-step videos to guide them through every detail of activities, experiments and projects that let them apply the concepts they just learned.

It's self-guiding, so kids can do it on their own, which is great if you don't have time to go through each experiment and lesson with them, but you still want them to have fun learning.

If you don't have the time or background, it's no problem! Your kids can do it entirely on their own!

Here's exactly what you get *each* and every month when you become part of my science family:

A Complete Self-Guided Program


Hydraulic Pneumatic Earth Mover

37 Comments

When people mention the word "hydraulics", they could be talking about pumps, turbines, hydropower, erosion, or river channel flow. The term "hydraulics" means using fluid power, and deals with machines and devices that use liquids to move, lift, or control motion.


COMPLETE EXPERIMENTS THAT WORK

Liquids behave in certain ways. They are incompressible, meaning that you can't pack the liquid into a tighter space than it already is occupying.



If you've ever filled a tube partway with water and moved it around, you've probably noticed that the water level will remain the same on either side of the tube.

However, if you add pressure to one end of the tube (by blowing into the tube), the water level will rise on the opposite side. If you decrease the pressure (by blowing across the top of one side), the water level will drop on the other side.




Let's play with these different ideas right now and really "feel" the difference between hydraulics and pneumatics. Connect two syringes with a piece of flexible tubing. Cut the tubing into three equal-sized pieces and use one to experiment with. Shove the plunger on one syringe to the "empty", and leave the other in the "filled" position before connecting the tubing. What happens when you push or lift one of the plungers? Is it quick to respond, or is it slow? What happens if you push or lift the other plunger? Is there any air in the system?

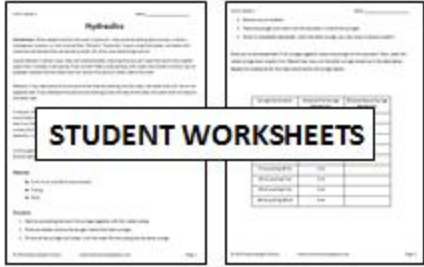
EVERYDAY MATERIALS

Now remove both plungers and, leaving the tubing attached, fill the system with water to the brim on both ends (this is a good bath-time activity!). Keep the open ends of the syringes at the same level as you fill them. What happens if you lower one of the syringes? What happens when you raise it back up? Is there now air in your system?

INSTRUCTIONAL VIDEOS



STUDENT WORKSHEETS



Step-by-Step Grade-Level Lesson Plans

- Complete science curriculum for your grade level.
- Access to over 1,000 science activities, experiments & projects.
- Easy shopping lists (most use inexpensive, available materials)

And I'm the one who personally does the teaching! You'll also find written explanations to support science concepts in addition to downloadable worksheets, tests, and quizzes.

There's a wide variety of topics including robotics, astronomy, electricity, chemistry, physics, geology, biology, and more, with more being added!

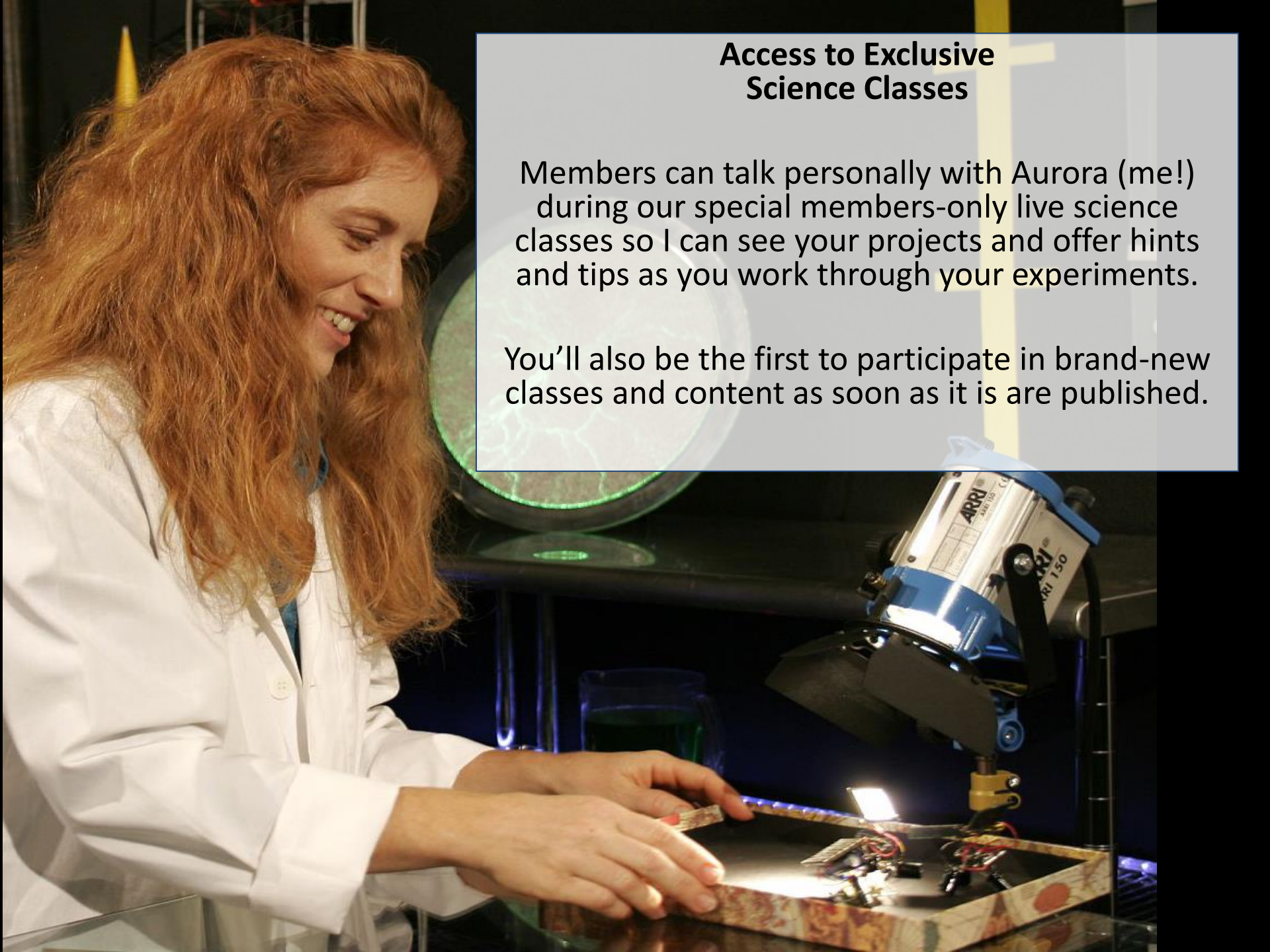
"My 9 year old son can't get enough of your videos!! He is insatiably curious, and I haven't been able to satisfy his curiosity till now. He watches about 5-6 lessons a day, then rummages around the house looking for stuff to replicate the experiments. My husband, who has 2 degrees in mechanical engineering says Luke is learning stuff he doesn't even know. We all enjoy learning from your videos. Your enthusiasm is contagious. Thank you so much!! ~Annie J.

Each Science Lesson includes:

- Complete video demonstrations, how-to lessons, explanations, worksheets, shopping lists, quizzes and exercises.
- Video-based online science curriculum that **explains topics to kids in a practical real-world way**
- **Unlimited support** for all your science questions.
- Everything is available **24 hours a day**, 7 days a week
- Since it's a **self-guiding program**, just set your kids up, and they'll go on their own. It's primarily based in hands-on learning.



"I wanted you to know that my son wakes up everyday telling me about what project he is going to be working on. I am, for the first time, actually excited with him!" Victoria H.



Access to Exclusive Science Classes

Members can talk personally with Aurora (me!) during our special members-only live science classes so I can see your projects and offer hints and tips as you work through your experiments.

You'll also be the first to participate in brand-new classes and content as soon as it is published.

Teaching Resources, Checklists, and Tools

Need to figure out what your student already knows and where the gaps are?

I've designed a special "Evaluation & Assessment Packet" for every subject area in each grade level that includes everything you need to make sure you've got those concepts covered.

ELECTRICITY GRADE 4

ASSESSMENT PACKET

An electrifying course that teaches the big ideas behind Faraday and Maxwell's ground-breaking work. You will discover how to design and test circuits, detect electric charge, learn about electrochemistry as you construct batteries, play with the static electric field, and uncover the mysterious forces that redefined the entire field of chemistry and physics when they were first discovered.



Created by Aurora Lippert, Supercharged Science

www.SuperchargedScience.com

This curriculum is aligned with the National Standards and STEM for Science.

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Educational Goals

The scientific principles we're going to cover were first discovered by a host of scientists in the 19th century, each working on the idea from each other, most prominently James Prescott Joule and Michael Faraday.

This is one of the most exciting areas of science because it includes one of the most important scientific discoveries of all time: electricity and magnetism are connected. Before this discovery, people thought of electricity and magnetism as two separate things. When scientists realized that not only were they linked together, but that one caused the other, the field of physics really took off.

Here are the scientific concepts:

Static Electricity

- The proton has a positive charge, the neutron has no charge, and the electron has a negative charge. These charges repel and attract one another kind of like magnets repel or attract. Like charges repel (push away) one another and unlike charges attract one another. (Usually things are neutrally charged. They aren't very positive or negative, rather have a balance of both).
- Objects that are electrically charged can create a temporary charge on another object.
- The triboelectric series is a list that ranks different materials according to how they lose or gain electrons.

Electricity

- When electric current passes through a material, it flows by electrical conduction.
- Metals are conductors not because electricity passes through them, but because they contain electrons that can move.

Electrochemistry

- There are different kinds of conduction, such as metallic conduction, where electrons flow through a conductor (like metal) and electrolysis, where charged atoms (called ions) flow through liquids.

By the end of the lab in this unit, students will be able to:

- Design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.
- Know how to demonstrate that electrically charged objects attract or repel each other.
- Know electrical energy can be converted to heat, light, and motion.
- Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
- Measure and estimate the weight, length, or volume of objects.
- Formulate and justify predictions based on cause-and-effect relationships.
- Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
- Construct and interpret graphs from measurements.
- Follow a set of written instructions for a scientific investigation.

NOTE: This assessment packet contains three sets of evaluations one for static electricity, current electricity, and electrochemistry.

Electricity Grade 4 Lab Practical

Student Worksheet

This is your chance to show how much you have picked up on important key concepts, and if there are any holes. You also will be working on a homework assignment as you do this test individually with a teacher.

Materials:

- AA battery case
- 2 AA batteries
- 4 alligator wires
- Switch
- LED
- 1.5-3VDC motor

Lab Practical:

- Design and build a simple series circuit which lights up an LED and includes a switch.
- Design and build a simple parallel circuit which powers both LED and motor at the same time.
- Explain how electrical energy can be converted to light or motion.

Electrochemistry Grade 4 Evaluation

Teacher Section

Overview: Kids will demonstrate how well they understand important key concepts from this section.

Suggested Time: 45-60 minutes

Objectives: Students will be tested on the key concepts of electrochemistry.

1. There are different kinds of conduction, such as metallic conduction, where electrons flow through a conductor (like metal) and electrolysis, where charged atoms (called ions) flow through liquids.
2. Electrolytes are a substance (like salt) that becomes a conductor of electricity when dissolved in a solvent (like water).
3. This type of conductor is called an "ionic conductor" because once the salt is in the water it helps along the flow of electrons from one clip lead terminal to the other so that there is a continuous flow of electricity.
4. Metals are conductors not because electricity passes through them, but because they contain electrons that can move.
5. Batteries need electrodes made of two dissimilar conductive materials, like metal.

Students will also demonstrate these principles:

6. Design and build a simple battery.
7. Know chemical energy can be converted into electrical energy.

Materials (one set for entire class):

- AA battery case
- 2 AA batteries
- 2 alligator wires
- Distilled water vial/syringe
- Disposable cup
- Salt
- Sugar
- 2 Pennies
- 2 Nails
- 2 Pieces of plastic
- 2 Popsicle sticks
- Digital Multimeter

Lab Preparation

1. Print out copies of the student worksheets, lab practical, and quiz.
2. Have a tub of the materials in front of you at your desk. Kids will come up when called and demonstrate their knowledge using these materials.

PLAY ALL THE ANGLES

The Impact of Thruster Angle on R.O.V. Speed

ABSTRACT

MATERIALS

PROCEDURES

CONCLUSION

RECOMMENDATIONS

RESULTS

SYNOPSIS

Anywhere Access

Log in to the e-Science Online Curriculum from anywhere: phone, home, work or car. Just use your email and password to access the dashboard and lessons.

Private & Supportive Online Community

The private website is one of the biggest benefits of your membership. Ask a science question, get ideas from other members, post your experiments for others to learn from... it's all secure and private.

Feedback from Aurora

Members get to participate in private Member's Only classes by Aurora and get daily support.

(Student shown in background won first place using my ROV Science Fair Project!)





When you **become a member of my Supercharged Science Family**, you're not just getting access to time-saving resources, plans and curriculum...

You're joining a **powerful and supportive community of like-minded scientists**, teachers and students (and you'll never be lonely again!)

Access to my award-winning **Science Fair Projects** is included in your membership.

This is done-for-you step-by-step instructions on **how to make eight different science fair projects**. You get complete project instructions on video, sample data tables, written report, board construction tips, and oral presentation outlines.

Projects include *Measuring the Speed of Light* using a chocolate bar, building a *Linear Accelerator*, constructing an *Underwater Remotely Operated Vehicle*, creating a *Hovercraft* that works on land **and** water, and more!

(Student shown in background won his Science Fair using my Tunable Crystal Radio with Variable Capacitor project!)





100% Money-Back Guarantee

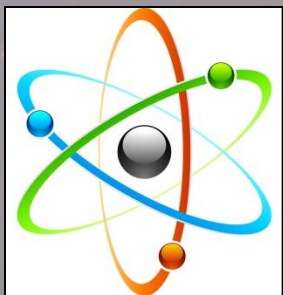
I know how important it is to invest ONLY in the resources and tools that will give us back the most valuable thing we have: TIME.

I created my online science curriculum to give you the resources and guidance you need for your child to learn science with confidence, without having to spend hours on prep and planning each week, scouring the internet and looking at questionable websites, trying to answer questions you're really not sure about.

But if you're not sure that my resources are going to give you the free time you've been missing and the support you've been searching for, then try e-science for a full 30 days. Do all the experiments and activities, watch the videos, read the explanations, build the projects, and even write in to get your questions answered personally by me. I mean really get all you can out of the program.

And if you aren't totally amazed by how much your kids are learning and how much fun they're having, just let me know and I'll give you a full refund. Even if you just change your mind, it's no problem – **you can request a refund for any reason, or for no reason at all.** There's nothing to return, no strings attached. Obviously, 100% of the burden to deliver is on me. And I promise, I won't let you down.

I am here to support YOU on your journey whether you're a student around a kitchen table or a science teacher in a classroom.



Hope to see you in the lab!

Supercharged Science

www.SuperchargedScience.com

