

# Supercharged Science

*Focusing on wonder, discovery, and exploration.*

**The e-Science program is appropriate for students grades K-12.** You'll find lots of experiments for students in this entire grade range. Younger students can still work through most of the program with a bit of your help (for using tools and hot glue guns) as they build the robots, laser shows, hovercraft, catapults, roller coasters, chemistry experiments, and much more.

## One program. All ages.



We find that learning is not segmented depending on age/grade, but rather dependent on a child's experience and interest, as well as the parent's goals. Thus our program supports this type of learning.

Most families of younger students want their kids to get excited about science, so they use the program differently than older students by focusing on experiments and activities and barely touching textbooks and academic material.

For older students, the K-8 content is included as a free bonus when you sign up for Grades 9-12. Many high school students use it extensively as a foundation.

Remember, your own goals for your child's science learning combined with your schooling philosophy will determine what is right for you.

## Topic Covered by e-Science

**The e-Science program covers K-12th grade Physical Science, Chemistry, Life Science, and Biology.**

**Here are the topics covered by the e-Science program:**

- How to do the Scientific Method
- Unit Zero Overview of e-Science
- Unit 1 Mechanics Lessons in Force, Gravity, and Friction
- Unit 2 Motion Lessons in Velocity and Acceleration
- Unit 3 Matter Lessons in Atoms, Density, and Solids
- Unit 4 Energy Part 1 Lessons in Levers and Pulleys
- Unit 5 Energy Part 2 Lessons in Potential Energy and Kinetic Energy

# Supercharged Science

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- Unit 6 Sound Lessons in Vibrations and Resonance
- Unit 7 Astrophysics Lessons in Astronomy, Particle Physics, and Relativity
- Unit 8 Chemistry Part 1 Lessons in Molecules and Chemical Kinetics
- Unit 9 Light Lessons in Light Waves and Lasers
- Unit 10 Electricity Lessons in Electricity and Robotics
- Unit 11 Magnetism Lessons in Permanent Magnets and Electromagnetism
- Unit 12 Alternative Energy Lessons in Solar Power, Wind Energy, and Fuel Cells
- Unit 13 Thermodynamics Lessons in Temperature and Heat
- Unit 14 Electronics Lessons in Breadboards, Circuit Boards, Digital Logic
- Unit 15 Chemistry 2 Lessons in Intermediate and Advanced Chemistry
- Unit 16 Life Science 1 Lessons in Living Organisms, Cells, Genetics, Microscopes
- Unit 17 Life Science 2 Lessons in Prokaryotes, Plants, Protists & Fungi
- Unit 18 Biology 1 Lessons in Invertebrates, Fishes, Amphibians, Reptiles, Birds, Mammals
- Unit 19 Biology 2 Lessons in Skin, Bones, Muscles, Digestive, Cardiovascular, Respiratory
- Unit 20 Fluid Dynamics Lessons in Aeronautics, Air Pressure, Rocketry

## How does e-Science teach this stuff?



**Your child can have an outstanding science education, with little effort from you.** We've taken most of the headache and hassle out of figuring out what to teach and how to present it to your child with our videos, audio teleclasses, projects, experiments, activities, textbook downloads, quizzes, and more. Your kids will soon be teaching YOU science!

When a teacher plans out what to cover during an entire course, there are nine master steps they need to cover about the topic. We've done this work for you work the e-Science program, but in case you're curious, here are the nine steps:

- **Unit Description:** *This answers the "What is it?" and "Why should I care?" about each unit.* This is where you'll find the overview of what the unit is all about. Each unit is broken down into Lessons, each of which last 1 – 3 weeks, depending on how much science you choose to do.
- **Outcomes/Goals:** *What do you want the students to learn?* The main scientific principle is embedded in here, and this stays at the forefront of the teacher's mind when they build the lesson plan for the topic. We've outlined these for you in the lesson plan. Each unit covers one key science principle.

# Supercharged Science

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- **Objectives/Highlights:** *Detail the key concept and topic into chunks.* Key concepts are often too big to teach in one swallow, so break it down into smaller bite-sized pieces presented in a logical order for students to understand. We've done this part for you in the lesson plan.
- **Introduction:** *How will you present the topic to the students?* This is where you figure out how to get your students hungry for your message. How will you get students interested in what you want them to learn? The introduction should spark their interest and give them something to think about and look forward to. This is already prepared for you, so you don't have to gather any demonstration materials together – it's all on the introduction video for each unit.
- **Development:** *This stirs up interest and gets students motivated to learn.* In a traditional classroom, this is the discussion about the topic itself, any useful background information, and questions that pop up from the students. We have live discussions (MP3) delivering an introduction to the group of students, complete with questions. It's a great way to start your new unit, and you don't have to prepare any notes!
- **Practice:** *Bringing the key concept to life.* The bulk of a science lesson is spent doing experiments and activities that cause the students to get curious about their world. This is the heart of the e-Science program, as there is a staggeringly long list of experiments, projects, and activities. Pace yourself and do the ones that best fit your goal, time and budget. Each experiment has an instructional step-by-step video that students can watch on their own as they build their project.
- **Further Study:** *Answering questions and gaining momentum.* After your students have completed a few experiments, questions are naturally going to pop up. The reading material with each unit is designed to help answer any questions that come up when you did your experiments and activities. If they still have questions, that's why we offer unlimited support – simply type in your question and you'll get a quick and quality response.
- **Evaluation:** *How well did you teach and how well did they learn the material?* Print out the exercises and have your students complete the exercises for the lesson so you know their comprehension level and where to spend more time.
- **Closure:** *Before moving on, celebrate your success!* This is where students can submit feedback, share photos, discuss what they've learned and figured out, and what still doesn't make sense. The comment sections hold many proud moments and images from our students!

# Supercharged Science

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*(Note: The e-Science program does not cover creation nor evolution so all families may participate. The focus of the program is on how to launch the rocket, build the robot, use a microscope, take measurements and data, etc.)*

## How NOT to Teach Science



**Most traditional science lesson plans will have you read textbook material first,** and then if you've got time, do an experiment or two... most of which are sadly boring and don't spark curiosity at all. And kids forget 95% of what you try to teach them when you do it this way.

**There's no single "right way" to teach kids,** because each student has their own personal learning style. All kids have their own unique learning mode (visual, auditory, kinesthetic, or digital), and the e-Science Learning Program covers all four. While kids have all four, there's usually a strong preference for one in order for them to get their *A-HA!* moment. Here are the four different modes:

- Auditory learners need to hear it to understand what's going on
- Visual learners need to see the experiment to understand the scientific idea
- Kinesthetic kids need to actually DO the experiment themselves for the ideas to really make sense
- Digital kids must read the actual text and words for it to make sense, whether on paper or on a computer screen (digital does not refer to computers, but rather words/digits on a page)

**The trouble comes in when we try to teach kids according to OUR learning style.** For example, I'm a visual learner, but my son is auditory. So he will *tell* me about his experiment but I haven't got a clue as to what he's talking about. However, as soon as he *shows* me what he's been building, I totally get it.

But no matter which style you learn best in, if you start out with a stale, flat entrance to learning science, your kids are going to get bored no matter how you deliver it.

## The Best Way to Learn Science

**We recommend teaching science from the inside-out,** meaning that you start with an experiment or two that really *hooks* your kids... the kind that makes them (and you) say; *"WOW!"* or *"Cool!"*

Let them roll around and play with the experiment for awhile, and when they come running back to you with questions like *"Why did*



# Supercharged Science

*Focusing on wonder, discovery, and exploration.*

*that happen?" or "What's going on here?"*, then they've signaled you that they are ready for the more academic reading and lesson videos.

The e-Science program has a lot of overlap in the content, so you won't have to stress over missing any content if you don't "do it all". For example, if you've got a more auditory learner, you'll probably spend most of your time with the teleclasses and videos. Digital students prefer the text downloads and reading about the experiment from the website. Kinesthetic and visual students will prefer watch the videos and build the projects.

We all have all four modes, but you'll find a stronger preference for one of these. You'll find more information about this in the Parent Resource section.

## "Help!!! I can't answer my kid's questions!"

**At Supercharged Science, we don't believe it's your job as a parent to have all the answers.** The next time your child runs to you with questions, you can honestly say, "Gosh - I'm not sure. Let's take a look together..." Your job as a parent is to be the biggest cheerleader for your student, meaning that you show them total confidence in their abilities to figure things out. You don't need to have all the answers. In fact, you're not supposed to. (Big \*sigh\* of relief here!)



**Ever notice how science experiments don't usually work?** You want your project to happen a certain way (for example, your paper airplane to fly), but after working at it you find your results are not as you expected (after folding the airplane, it consistently nose-dives).

**Most people stop here and give up, but this is where the greatest opportunity for learning starts.** Stop to take a closer look and really start to ask quality questions, like:

- *"Does it matter what type of paper we use?"*
- *"Is it heavy on one side?"*
- *"What if we add a paper clip to the nose?"*
- *"How do real airplanes keep from nose-diving?"*

Help your kids out by teaching them how to ask questions based on what they observe happening - that's how real scientists do their thing! But sometimes you really do get stuck and need help, so that's why **this e-Science program includes Unlimited Support for as long as you need it.** My team and I are committed to your long-term success and not here to offer you a one-time solution.

# Supercharged Science

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What this means is that you're off the hot-seat with having to come up with all the answers. We love it when kids contact us with their questions, because it shows that they are taking charge of their own education. What this *really* means is that your child is now finding their answers to their questions, freeing up your mind for more important things.

**There is an easy way for kids to get their questions answered.** Simply post the question on the e-Science program (in the comment box of every experiment). Just type in your question in the comment box and *presto!* you'll see an answer in less than a day.

## What About Summer?



**Summer is the time we boost the super-cool experiments and lighten up on the academics.** This summer, we'll show you how to transform your house into a hands-on science museum and run a science camp right in your own backyard, complete with summer night star gazing and lessons on how to roast marshmallows with light beams while you watch colored campfires. We'll also have an in-depth look at how to operate a compound microscope, shake up more chemical reactions, and learn the real science behind popular magic tricks.

**Now it's time to start learning with the e-Science program!**