

“Teaching” The Junior High and High School Sciences At Home

by Dr. Jay L. Wile, Ph.D.

Qualifications

- As a university professor, helped develop Indiana’s Only Residential High School for Gifted and Talented Students
- NSF-Sponsored Scientist with More Than \$200,000 In Research Grants
- Became Interested in Homeschooling Because of Excellent University Students Who Were Homeschooled
- Currently writes homeschooling courses and is an adjunct professor at Anderson University

Why Do I Need to Teach Science?

- Government schools require it-and you want to give your children a *better* education!
- Today’s world is so science & technology oriented that children must have a basic grounding in science.
- All colleges require at least 2 semesters of science, even if you are studying to be a poet!
- Your child might be perfectly suited for a career in the sciences. This is how to find out!

Can I teach high school science? ---- **NO**

As your student gets older, your role changes from teacher to fellow learner.

But can I help my child learn science? --- **YES**

- IF YOUR KIDS CAN LEARN IT-YOU CAN TOO!!!!
- LEARNING FROM READING IS THE MOST PRODUCTIVE KIND OF LEARNING
- IF OTHERS CAN DO IT - YOU CAN TOO !!!!!!

Even at the high school level, homeschooled students are better at science than publicly-schooled students!

- ⌘ Several large studies in individual states and Canada indicate that homeschooled high school students score between 68 to 88 percent on standardized science tests, compared to 50% for publicly-schooled students
- ⌘ In the ACT, homeschooled students score 21.9 in science compared to the 21.1 overall average. That’s about 10 percentage points higher using the ACT scale

Alberta High School Science

Grade 9 Science: chemicals and properties, periodic table, electricity and circuits, DNA, genes, space exploration, how science affects technology

Grade 10 Science: ecology, cells, chemistry of life, motion, energy, forces, conservation laws

The rest is geared to subjects. Each division has a “20” and a “30” level, i.e., Students choose among the six possibilities (**Biology 20/30, Chemistry 20/30, Physics 20/30**) based on their individual goals

MATHEMATICS: A NECESSARY TOOL FOR LEARNING THE SCIENCES

“Diplomacy without arms is like music without instruments”

-Alexander the Great

“Science without math is like music without instruments”

-Jay Wile the Not-So-Great

MATH TOOLS NECESSARY FOR LEARNING THE SCIENCES

BIOLOGY: Metric Units

CHEMISTRY: ARITHMETIC and ALGEBRA: (*Algebra 1, Saxon*)

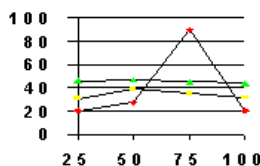
Fraction Manipulation: $\frac{7}{64} \times \frac{64}{13} = \frac{7}{13}$

Positive and Negative Numbers: $-122.45 + 567.3 = 454.85$

Manipulating exponents: $10^2 \times 10^3 = 10^5$

Algebraic Manipulation: $PV = nRT \rightarrow n = \frac{PV}{RT}$

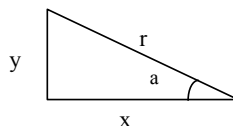
Reading Graphs and Understanding trends:



MATH TOOLS NECESSARY FOR LEARNING THE SCIENCES

PHYSICS : Should have finished Algebra II and be at least starting Trigonometry (*Algebra II*, Saxon)

Using Trig in Triangles:



$$y = r \sin a$$

$$x = r \cos a$$


$$y/x = \tan a$$

ADV. CHEMISTRY : Should have finished Algebra II

Logarithms: $\log(x) = 3 \rightarrow x = 1,000$

$$\log(xy) = \log(x) + \log(y)$$

ADV. PHYSICS: Should have finished Precalculus (*Advanced Math*, Saxon)

	Not Science-Oriented	Science-Oriented	MathPrerequisite
Seventh Grade	General Science	General Science	None
Eighth Grade	Physical Science	Physical Science	None
Ninth Grade	Biology	Biology (Supplement I)	None
Tenth Grade	Chemistry	Chemistry (Supplement II)	Algebra I
Eleventh Grade	Physics	Physics (Supplement III) 	Algebra II; At least beginning trig
Twelfth Grade	Supplements	Advanced Biology OR Advanced Chemistry OR Advanced Physics	None Algebra II Precalculus

A Word About the Timeline

- Your student's math level should drive this time line, especially if the student is science-oriented. When the student *begins* Algebra I, that's when Biology begins.

- Prior to junior high, you can choose a wide range of programs. Most importantly, however, **emphasize math!**

What About Experiments?

1. Fun and Interesting, but not absolutely necessary
2. Most universities want to see three sciences, two of which are lab based. (Keep a notebook!)
3. The labs don't have to be attached to the curriculum.

Compared to the Alberta Curriculum

Grade 9 Science: That and more covered in General Science and Physical Science

Grade 10 Science: Covered between Physical Science and Biology

Biology 20/30: Most of 20 and some of 30 covered in Biology. The rest (+more) in Adv. Bio.

Chemistry 20/30: Most of 20 and some of 30 covered in Chem. The rest (+more) in Adv. Chem.

Physics 20/30: Most of 20 and some of 30 covered in Physics. The rest (+more) in Adv. Phys.

The Science Curriculum I Wrote

Exploring Creation With General Science

-Dr. Jay L. Wile

Exploring Creation With Physical Science

- Dr. Jay L. Wile

Exploring Creation With Biology

-Dr. Jay L. Wile and Marilyn Durnell

Discovering Design With Chemistry (Unlike my other junior high and high school courses, this

-Dr. Jay L. Wile

is published by Berean Builders.

<http://www.bereanbuilders.com>)

Exploring Creation With Physics

-Dr. Jay L. Wile

The Human Body: Fearfully and Wonderfully Made!

- Marilyn Shannon and Rachel Yunis

Advanced Chemistry and Creation

-Dr. Jay L. Wile

Advanced Physics and Creation

-Dr. Jay L. Wile

Other Options

Beginnings Publishing

Phone: (800) 831-3570

<http://www.beginningspublishing.com>

They have a great 2-year junior high program that is very hands-on (more than mine).

They also have a good high-school chemistry course if your student is not university-bound.

The “In Your Home” series:

This is a research-based series in which the students are asked questions that they must find answers for.

<http://www.scienceforhighschool.com/>

Supplement I

Refuting Evolution 2 by Dr. Jonathan Sarfati

Reasonable Faith: The Scientific Case for Christianity, by Dr. Jay L. Wile

Supplement II

The Cell’s Design: How Chemistry Reveals the Creator’s Artistry by Dr. Fazale Rana

The Great Global Warming Blunder by Dr. Roy W. Spencer

Supplement III

The New Creationism by Paul Garner

Signature in the Cell by Stephen Meyer