How Do You Know If You're Doing Enough?

Even if you are willing to abandon the textbook approach, many parents feel insecure at determining what level their children should be working on a science topic. Does making a model of the body systems equally satisfy learning needs of both a seven-year-old and a twelve-year-old? Probably not.

Kathryn Stout's *Science Scope* (Design-A-Study, 302-998-3889, www.designastudy.com) helps you identify appropriate activities for different age groups within each science area. This is an extremely useful resource. Divided into four main areas—general science, life science, earth science, and physical science—it lists specific topics under each heading. Then it suggests methods for use with students at primary, intermediate, junior, and senior high levels. All of this makes it much easier to select appropriate resources for topical science studies.

Another scope and sequence resource, *Teaching Science and Having Fun!* is described on page 248.

What To Do?

Summarizing all of this into a recommendation, for the elementary grades I suggest choosing three or four science topics per year, taking into account the general topics you feel should be covered as well as your children's interests. Then use information books, experiment/activity books (such as those listed throughout this chapter), and field trips to put together an interesting study for each topic.

I can just imagine some parents reading what I've just written and saying, "Oh, great! I've got to go make it all up myself. Forget it!" Those of you who don't delight in creating your own courses can take heart. Others have done it for you. They have chosen one or a few topics, found some real books that make the subject interesting, come up with activities or experiments, and put it all together in one place to make it easy for you to teach science through topical unit studies. If you are using a larger unit study that encompasses many subject areas, you are likely to find this approach to science already incorporated into your unit study.

Following are reviews of science resources. Many of these support the approach to science I have described above. Some are more traditional to fit situations where unit study approaches to science are not practical.

It is impossible to narrow science resources down to "the best" and simultaneously cover all possible science topics. So those you find here are representative of a wide range of useful resources. I hope that just thinking about possibilities will help you figure out what you might want to use with your own children. If you still need inspiration, almost all homeschool distributors' catalogs feature all sorts of fun and fascinating science resources.

Many of the Top Picks in this chapter will work for students beyond the elementary grades. However, I've also created a separate section of reviews of "more traditional" resources for junior and senior high toward the end of this chapter. Because of what needs to be accomplished at those grade levels, most of my Top Picks for older students are more traditional.

"Anything but a Textbook"

If you agree with my philosophy of science education, then you will probably be looking for real books on particular topics rather than textbooks. Many publishers specialize in heavily illustrated, visually appealing topical books. These are the kind of books children will pick up to read on their own. The following are some examples of this type of book:

The Visual Dictionary of the Human Body (DK Publishing, Inc.)

See How They Grow series (great for very young children) (DK Publishing, Inc.)

Let's Explore Science series (information and experiments for ages 4–7) (DK Publishing, Inc.)

Look Closer (nature series for ages 7–10) (DK Publishing, Inc.)

ASPCA Pet Care Guides for Kids (ages 7 and up) (DK Publishing, Inc.)

The Way Things Work by David Macaulay (DK Publishing)

Castle, Cathedral, City, Mill, Pyramid, and *Underground* by David Macaulay (these cover both science and history) (Houghton Mifflin)

The Magic School Bus: Inside the Human Body, Inside a Hurricane, On the Ocean Floor, Lost in the Solar System and other titles by Joanna Cole (Scholastic)

Amazing Animal Babies, Amazing Snakes, or *Amazing Spiders* (from the *Eyewitness Junior* series for ages 6–10) (Random House)

Butterfly and Moth, Dinosaur, Fish, Insect, Reptile, Car, Crystal and Gem, Early Humans, Flying Machine, *Invention, Plant and Flower, Pond and River, Rocks and Minerals, Seashore, Shell, Sports, Tree*, and *Weather* (from the older level *Eyewitness* series for ages 10 and up) (Random House)

Energy & Power, Weather & Climate, and *The World of the Microscope* (from the *Usborne Science and Experiments* series for ages 10–16) (Usborne Books)

Stars & Planets, Human Body, Undersea, Electricity, and *Jets* (from the *Usborne Young Scientist* series for ages 9–13) (Usborne Books)

Introduction to Chemisty, Introduction to Biology, and *Introduction to Physics* (ages 12 and up) (Usborne Books)

Blood and Guts by Linda Allison (study of human anatomy and physiology) Little Brown and Co.

Don’t forget to include field guides, biographies of famous scientists, and historical fiction about scientific discoveries. Field guides start to seem essential when you concentrate on particular topics. If you study birds, then you become curious about the types that you see in your area. The same thing happens with flowers, trees, rocks, and other such topics. I like the series of guides from Peterson and from Audobon Society best, but look for simpler guides if you start with young children.

As far as biographies and historical fiction, you will find plenty of choices at the library and in homeschool distributors’ catalogs. The following are a few such titles to get you started:

Archimedes and the Door of Science by Jeanne Bendick (Bethlehem Books)

Albert Einstein, Young Thinker by Marie Hammontree; *Thomas Edison, Young Inventor* by Sue Guthridge; *Wilbur and Orville Wright* by Augusta Stevenson; and other titles (Aladdin

Library)

Along Came Galileo by Jeanne Bendick (Beautiful Feet Books)

Benjamin Franklin by Ingri and Edgar Parin D'Aulaire (Beautiful Feet Books)

Galen and the Gateway to Medicine by Jeanne Bendick (Bethlehem Books)

The Mystery of the Periodic Table by Benjamin D. Wiker (Bethlehem Books)

Scientists from Archimedes to Einstein (Usborne Books)

Science: 100 Scientists Who Changed the World by Jon Balchin (reference work with two-page biographies of key scientists—high school level) (Enchanted Lion Books)

Don't limit yourself to books. Science kits, equipment, games, and software can get your children really excited about science. Again, homeschool distributors usually carry these sorts of things. But there are a few companies that specialize in science and have catalogs devoted just to science "stuff." Some of the best are:

- Home Training Tools (800) 860-6272, www.HomeTrainingTools.com
- Nasco (they also have specialized catalogs for art and math) (800) 558-9595, www.nascofa.com
- Nature's Workshop, Plus! (888) 393-5663, www.naturesworkshopplus.com
- Tobin's Lab (800) 522-4776, www.tobinslab.com

Science Experiment Books

Absolutely crucial are hands-on experiences with science. Experiment and activity books often supply the magic ingredient that draws children into science. I particularly like the books that pose questions and stimulate thinking rather than the books that simply outline steps in an experiment. Again, the possible choices are numerous, but I have chosen a couple of Top Picks that I think especially good.

AIMS Program
AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747-8120
(888) 733-2467
e-mail: aimsed@aimsedu.org
www.aimsedu.org
Most books are $21.95

This series of activity books combines science with math activities in fun projects for experiencing science in action. There are more than eighty books on all sorts of topics. Here are just a few examples.

The Sky's the Limit deals with flying and aerodynamics. *From Head to Toe* studies the human body. *Floaters and Sinkers* makes the concepts of density, volume, and mass come alive. *Down to Earth* has an unlikely combination of activities for geology, meteorology, and oceanography. *Fun with Foods* is one of my absolute favorites. Food items like popcorn and bananas are used in ways most of us would never dream up on our own. For example, one

activity has to do with the amount of popped corn obtained from various brands of popcorn. As they proceed, students learn about ratio, volume, value-for-cost, etc.

Reproducible worksheets are included for recording data from the activities. Books cover grade-level groups such as K–3, K–4, and 5–9. These are fantastic for all types of learners, although some will not enjoy recording and analyzing the data as much as others.

You will need to gather some resources and do some prep work for these sessions. The lessons themselves are totally interactive. You can mix children of different ages, assigning tasks according to their abilities. Of course, you should expect older children to do more analysis, data recording, "hypothesizing," and explaining than younger children.

These activities work well across all learning styles: Wiggly Willys love the hands-on part. Sociable Sues love the interaction and discussion. Competent Carls love trying to figure out what's going on. And Perfect Paulas like to record the data and organize the activity.

Choose a book that fits in with science topics you are studying. Then plan an afternoon once every week or so for each AIMS lesson, and I expect it will become one of the highlights of your schooling.

Backyard Scientist
by Jane Hoffman
Backyard Scientist
P.O. Box 16966
Irvine, CA 92623
(949) 551-2392
e-mail: backyrdsci@aol.com
www.backyardscientist.com

$8.95 each

Jane Hoffman has written six *Backyard Scientist* experiment books that are at the top of my list because they are educational, practical, and fun. Rarely do experiment books achieve all three! In addition, delightful illustrations make the books visually appealing.

All of the books deal with chemistry and physics principles except the *Backyard Scientist Series Three* and the last book, which is a specialized study of earthworms.

The first and last books are slightly different from the other four in format. The first book, *The Original Backyard Scientist*, sets up each experiment like a mystery investigation. Students "gather clues" as they work to come up with their own solutions. At the end of each experiment in this book, as well as in the others, Jane Hoffman explains the solution or what students should have learned in the experiment— a real help for parents without a strong science background.

The last book in the series, *Exploring Earthworms with Me*, has all sorts of creative experiments to learn about earthworms as well as basic scientific principles. It poses a number of intriguing questions in the middle of each experiment.

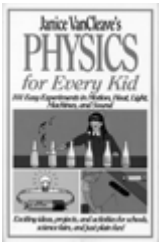
The middle four *Backyard Scientist* books are titled *Series One, Series Two, Series Three*, and *Series Four.* Each experiment in these books starts with a question that will start your child wondering. For example, "Will a bottle filled with water float when placed in a container filled with water?" Students go on to experiment with a full bottle, empty bottle, half full bottle, etc., to learn basic principles of flotation. In another book, students start with the question, "Can

rocks absorb and hold oil?" They proceed to a more challenging experiment about properties of different types of rocks and oil.

Experiments vary in level of difficulty, although there are few that I would describe as very complex. *Series Two* and *Series Four* have the most challenging experiments; *Series Two* is targeted at ages nine to fourteen and *Series Four* is designed more for groups or for older students. *Series Four* has some experiments with dry ice and others such as one where students make an electric buzzer (probably the most complex experiment in the series)—adult supervision is definitely required. (You could use some *Series Four* experiments for a themed birthday party!)

Backyard Scientist also publishes a supplement, *Biblical Applications from the Backyard Scientist*, as a companion to the other books. A biblical correlation for each experiment (but not all) in those books adds another dimension to your science studies.

I particularly like the presentation in the Backyard Scientist books because they stimulate thinking rather than simply directing students through steps of an experiment. Most of the supplies are either easy to obtain or already available in your home. And the experiments really work, something that can't be said about many other experiment books.



***Science for Every Kid* series**
by Janice VanCleave
John Wiley and Sons, Inc.
www.wiley.com
$32.50 hardcover, $12.95 paperback each

Janice VanCleave's science experiment books are very popular among homeschoolers. I will describe one book from the series, *Physics for Every Kid: 101 Easy Experiments in Motion, Heat, Light, Machines, and Sound*, to give you an example of how the books are designed.

Experiments range from extremely easy to slightly involved, but none require fancy equipment. The most complicated activities are things like building a wheel-and-axle contraption out of pencils, a spool, and string. The cost for doing experiments and the hassle of finding what you need is minimal.

Experiments are designed for children ages eight to twelve and have been child-tested. Each experiment lists the purpose, materials needed, step-by-step instructions, results (what should happen if all goes well), and an explanation. Everything is very straightforward and easy to understand. One criticism I have is that this book lacks the "wonder quotient" we find in some books, such as *The Backyard Scientist*, that prompt kids with "wondering why" questions before they begin.

A valuable asset of this book is its organization. We can easily select experiments to go along with whatever topics we are studying because they are divided into categories: electricity, magnets, buoyancy, gravity, balance, flight, simple machines, inertia, motion, light, heat, and sound. Also—unlike most experiment books for children—it has an index that helps us connect experiments with particular concepts. Other science titles in the *For Every Kid* series are *Astronomy, Biology, Chemistry, Constellations, Dinosaurs, Earth Science, Food and Nutrition, The Human Body*, and *Oceans.*

Try This On for Science
by Ron and Peg Marson
TOPS Learning Systems
10970 South Mulino Road
Canby, OR 97013
(503) 263-2040
e-mail: topsideas@yahoo.com
www.topscience.org

$10.00

In our early days of homeschooling, I tried a number of science experiment books with mixed results. One of the toughest areas for us was experiments with batteries and/or electrical circuits. We purchased the TOPS book on *Electricity*, and were amazed when every one of the experiments worked! Even better, they required minimal equipment and expense. That book alone sold me on the rest of their books.

TOPS actually has two different series of books: Task Card Books and Activity Page Books. However, apart from slightly different formatting, these books are very similar in the way they work.

Each activity page has clearly numbered and illustrated instructions. The cartoon style illustrations used are very appealing. Information for the teacher lists the objective, some details that will help the experiment work out, answers, extension activities, and a list of materials needed. Extension activities often are substantial enough for another entire lesson! You are free to reproduce the pages for your own families or "classes."

Books are targeted for different age groups, but a large number are for junior and senior high. Most books, especially those for older levels, include math application. Even some of the younger level books include data recording. While other experiment books introduce scientific principles, this approach takes students to a deeper level of learning that really prepares them for challenging science courses.

There are thirty-five different books available that work for homeschooling. Each book addresses a single topic, such as pendulums, metric measure, floating and sinking, oxidation, solutions, heat, pressure, magnetism, light, machines, rocks and minerals, electricity, corn and beans, and planets and stars.

Youngest level books are for grades 3 through 7 or 8 while other books cover grades 5 through 10, 8 through 12, or other such spans. (TOPS has a few other books primarily of interest to classroom teachers.) You can use TOPS experiments as family or group activities, do them one-to-one with your children, or let older students tackle them independently.

TOPS has made it easy for you to sample the entire range of their books with *Try This On for Science.* They have taken one activity lesson each from forty-one of their books and compiled them into this one "sampler." The collection represents the entire level of difficulty and topics so you can preview before purchasing complete topic books. All the activity lessons featured in this book are also available online for free at their Web site, but the convenience of the book is well worth the purchase price. Each lesson page includes a listing of the age range of the source book, number of activities and pages, plus the price.

You can start with the sampler, but I think you'll become a fan, too, no matter which book you choose.

Curriculum

Some science curricula are similar to unit studies, combining a variety of activities and resources for topical science study. *Media Angels* books, *Great Science Adventures, A History of Science, Living Learning Books*, and *Stratton House Home Science Adventures* are among resources reviewed below that fit this description. They vary in the amount of information they include, often sending you elsewhere for resource material. This type of curriculum best reflects my own ideas about how children should learn science.

For parents who want to use a more traditional approach through the elementary grades, I have also included a few such resources.

***Science for Christian Schools* series**
Bob Jones University Press
Greenville, SC 29614
(800) 845-5731
www.bjup.com

If you really want a traditional-type textbook series for science in the elementary grades, Bob Jones University Press's series is one of the better choices. Recognizing that children have different learning styles, they have incorporated activities to fit different styles.

Textbooks are attractively printed in full color and are hardbound for durability.

Scientific thinking is stressed more than fact memorization in the elementary grades. Scriptural principles are incorporated with science applications in the curriculum.

Activities are at the heart of many lessons rather than being presented as optional—especially at the early grade levels. Most activities are outlined in the teacher's editions. That means these courses need to be taught—you cannot just hand your child the text to use on his or her own.

Home Teacher's Editions are essential as are Notebook Packets of student work/activity pages for each level. These teacher editions are well organized and easy to use. Upper levels also have additional visuals, charts, and game pieces that come as part of the Teacher Packet. Everything you need (including tests and answer keys, but *not* materials needed for experiments) is packaged as a kit for each grade level.

These courses do require lesson preparation and presentation time, but if you take time to follow lesson plans from the manuals, you and your children should find the courses very engaging.

While courses are written for particular grade levels, you can use one level for children over a two- or three-year span of grade levels with a little adaptation to suit their abilities. (It will be most challenging to do this for first and second graders who are still developing reading and writing skills.) Because courses are challenging, when you stretch to cover a range of grade levels, you should probably choose a level below that of your oldest student.

***Grade 1* kit**, $63.50

The text for first grade covers the following topics on an introductory level: senses, heat, sound, wild and tame animals, and the sun, moon, and stars. The supplementary listening cassette (included in kit) is essential for chapters 1 and 11.

***Grade 2* kit**, $57.50

Both physical and life sciences are introduced in this text. Topics include bones, plants, shape and movement of the earth, forces, and shorelines.

***Grade 3* kit**, $57.50

Topics at this level include classification of animals, the solar system, photosynthesis, birds, mass, and weight. Student worksheets include some that have students start to record observations from activities. All of these items are in the Science 3 kit.

***Grade 4* kit**, $79.50

At this level, students are developing scientific skills of observation, classification, and interpretation. The contrast between creation and evolution is introduced with a study of the origin of the moon. Other topics include insects, light, electricity, area and volume, simple machines, digestion, animal defenses, trees, and erosion.

***Grade 5* kit**, $79.50

This text builds on the thinking-skills foundation begun in the fourth grade text and continues to develop skills of inferring, predicting, and experimenting. However, it is not dependent upon prior study of the fourth grade book. Topics studied include fossils, airplanes, thermal energy, atomic theory, weather, plant and animal reproduction, oceans, forces that cause wind, and tracks. The theme of the limitations of man's understanding and God's omnipotence underlies the study.

***Grade 6* kit**, $101.00

This newly revised edition also has a companion student activities manual and its own teacher's edition. These, rather than a notebook packet, are included in the homeschool kit along with tests and answer key. The activities manual has pages for recording and evaluating experiments and activities plus some review pages. Among topics studied at this level are earthquakes, volcanoes, weather, cells, classification, atoms and molecules, electricity, motion and machines, the stars, the solar system, plant and animal reproduction, heredity and genetics, and the nervous and immune systems. Scientific method is taught through experiments and activities.

Christian Kids Explore Biology
by Stephanie L. Redmond
Bright Ideas Press
P.O. Box 333
Cheswold, DE 19936
(877) 492-8081
e-mail: info@brightideaspress.com
www.brightideaspress.com

$29.95

I like the balance of information and activity in this science curriculum for grades 3 through 6 that is presented within a single 295-page book. Developed by a homeschool mom, *Christian Kids Explore Biology* is set up, ideally, for two ninety-minute block sessions a week.

The first session each week is “teaching time.” It begins with reading and discussing the information from the text. Students complete a daily reading sheet (reproducible form in the appendix), write words and definitions for their vocabulary list in a notebook, possibly work with flashcards, and do extended reading or research.

The second session is “hands-on time” for experiments or activities. These don’t require expensive or exotic materials, but it will take a little work to gather the necessary items (e.g., brown pipe cleaner, magnifying glass, old T-shirts, face paints, alligator stickers). There are also some artistically done coloring pages—at least one per unit. Colored pencils are the perfect medium to use for these. The book has numerous smaller black-line illustrations that children might also color. Students should each maintain a three-ring binder in which they keep all of their science work, including coloring pages. You will need to select activities and adjust the amount of work required according to the ages and abilities of your children.

Other reproducible pages in the appendix include an experiment form, field trip form, plant observation form, maps, Scripture memory cards, recipes, supplemental activities, and pictures for an ABC animal kingdom book that students create.

Lengthy lists of recommended resources at the back of the book suggest books, videos, CDs, games, puzzles, and other possible helps for each unit. You don’t have to use other resource books, but the study will be much richer for students if you use some of the colorful picture books available on the different science topics. I believe that students in upper elementary grades need more factual information than is provided within the book alone, so I highly recommend using additional books with older students.

There are eight units with a number of lessons per unit—thirty-five lessons in all—so the curriculum should take one school year to complete. Vocabulary words and lists of materials needed are at the beginning of each unit. Each unit concludes with a review, a “test,” and a writing assignment.

A biblical worldview is presented throughout with the idea of God as the master designer a key theme. The first lesson advances a creationist perspective, although it takes no position on the age of the earth. However, recommended resource books tend toward a young-earth position.

Considering God's Creation
Eagle's Wings Educational Materials
P.O. Box 502
Duncan, OK 73534
(580) 252-1555
e-mail: info@EaglesWingsEd.com
www.EaglesWingsEd.com
$29.95, additional student books—$13.95

This multigrade science curriculum is for children in grades 2 through 7. Creation serves as the backdrop for science studies that can be easily adapted for multilevel teaching in the homeschool setting. This one-year program is contained in a teacher's manual and a student book. The publisher says it can also be used as a supplement to other curriculum if desired, but I doubt many use it that way.

The teacher's manual contains the lessons, written in an easy-to-use format. Each lesson first describes advance preparation required. Next are vocabulary words listed with definitions and origins. Following is the "introduction"—actually the main idea of the lesson—which can be read to students directly from the book. The words from an original song/poem about the lesson are included. The actual song is on the accompanying professionally recorded audio CD that comes in an attached envelope in the back of teacher's manual. (Cassettes are also available.)

Because the authors believe in hands-on activities for effective learning, at least one such activity is described in each lesson. Many of the activities utilize student activity pages from the 270-page student book.

While a Christian view of science is presented throughout each lesson, a special section called "Bible Reading" directs students to Scripture for verses related to the subject under study. The creationist viewpoint, including belief in a young earth, is a dominant theme. A fun extra, called "Evolution Stumpers," provides tidbits of scientific information with which to challenge the theory of evolution.

A review section includes questions to pose to your children about each lesson. Since the curriculum is designed for a wide age span, the final section, "Digging Deeper," offers suggestions for additional study, activities, investigations, reading, reports, etc., which can be used as is appropriate with each student.

The student workbook consists of work/activity pages. You are free to make copies for immediate family and classroom use only, although you might prefer to order a separate workbook for each student. These sheets are often the foundation for investigations or experiments, or they are used for cut-and-paste activities, all of which are essential parts of the curriculum.

Students compile their own notebooks as they work through these activities and lessons. A few extra items will be needed for activities—crayons, scissors, and glue for most lessons, plus items like flashlights, shoe boxes, rocks, and library/resource books on particular topics.

Topics covered include creation, the universe, the earth, rocks and minerals, weather, plant kingdom, ecology, insects, spiders, fish, reptiles, birds, mammals, amphibians, animal structures, food chains, animal reproduction, instinct, man, and scientists. None of these topics is covered thoroughly, since that would be impossible within a one-year curriculum. If you examine the list of topics, you can see that life science receives the most attention, with earth science filling the remainder.

We definitely need to make decisions about what to require from each child, since some material will be too challenging for young students and some not challenging enough for older students. It also requires significant preparation and presentation time. However, this curriculum is one of the best for homeschool families that want a Christian science curriculum for teaching a broad span of grade levels together.

Great Science Adventures
by Dinah Zike and Susan Simpson
Common Sense Press
P.O. Box 1365
Melrose, FL 32666

(352) 475-5757
www.greatscienceadventures.com
$22.00 each

This arts-and-crafts approach to science is totally different from anything else I have seen. One of the authors, Dinah Zike, is well known for her *Big Book of Books and Activities* and other books where she shows how to cut and fold paper into all sorts of creative forms to be used by students as tools for learning and presenting information. In *Great Science Adventures* these are called 3D Graphic Organizers, and they are used throughout the series.

More than half of each book consists of pages to be cut and put together in one fashion or another. About half of these activity pages are for creating little booklets that correspond with each of the twenty-four lessons. These booklets have preprinted pictures and text to convey the factual information on each topic, so we need not use outside information resources unless they are assigned as research for older students.

But lessons are much more than the creation of booklets. Two- to three-page lesson plans give you key concepts, vocabulary words, and a number of activity ideas from which to choose. Each lesson might take from one to three days to complete. You should be able to complete two of the *Great Science Adventures* books per year if you do science two or three days per week.

The authors say the curriculum is appropriate for grades K through 8, but I suspect younger students will find most of the work too difficult. Older students need to be assigned challenging activities from "Experiments, Investigations, and Research" at the end of each lesson plan.

Each lesson begins with reading the corresponding booklet. Some text in small type should be read only by or with older students, but all of the large-type text should be read with everyone. Then you assign appropriate vocabulary words. Instructions for creating a vocabulary book are in the introduction.

Every lesson includes work with some sort of graphic organizer. Other cut-and-paste pages in the book are used to make these. Children might be cutting, pasting, labeling, writing, drawing, or coloring depending upon the topic and their ability level. Children often refer to the booklets for information to write in the organizers.

Detailed lab activities called "Investigative Loops" are in many of the lessons. These require children to use scientific method as they ask questions, make predictions, follow procedures, measure, observe, record data, come up with conclusions, and maybe pursue other questions that arise from the experiment. Common household items are used, but it will take time and planning to gather and prepare materials for the investigations.

Some lessons, instead, have a demonstration or other activity that does not require application of the scientific method.

The last part of each lesson offers a number of optional activities. Some might be done by the group, and some might be done independently by older students. These cover the range of learning styles and age abilities. Some examples from a single lesson: "Use clay to form a

mesa, a butte, or both. Compare and contrast the two." "Write a story that takes place in the American Southwest on a mesa." "Research Stone Mountain, Georgia. Report on your findings." And "Investigate hydrodynamics." Sometimes books or Internet sites are listed for reference.

After the lesson plans are two pages on assessment that might be easy to overlook. However, these pages offer some very practical ideas parents will probably want to use, so make a point to read them.

The Great Science Adventures series is divided into three groups: life science, physical science, and earth science. You should probably rotate through these three areas as you choose titles so that children get exposure to a broad range of science. There are sixteen books in the series covering topics such as plants; insects and arachnids; the human body; vertebrates; ecosystems; health and safety; tools and technology; energy, forces, and motion; light and sound; magnets and electricity; atoms, molecules and matter; space; atmosphere and weather; landforms and surface features; oceans and fresh water; and rocks and minerals. Most of these should be available by the year 2005.

You are given permission to reproduce pages for your "classroom," so purchasing one book per topic will be sufficient for your family.

A History of Science
by Rebecca Berg
Beautiful Feet Books
139 Main Street
Sandwich, MA 02563
(800) 889-1978
www.bfbooks.com
Guide—$12.95, complete package—$146.95

This is a guide for a literature-based introduction to science for children in the elementary grades. The guide takes you through a number of real books for a one-year study.

The complete package includes *The New Way Things Work, The Picture History of Great Inventors, Explorabook, Along Came Galileo, Archimedes and the Door of Science, The Story of Thomas Edison, Albert Einstein, Marie Curie's Search for Radium, Benjamin Franklin's Adventures with Electricity, Pasteur's Fight Against Microbes*, a *Scientist's Card Deck, A Science Experiment Pamphlet*, a *History of Science Timeline*, and the guide. A package without the first book (which is optional in the study) is available for $114.95. These are almost all items that I would recommend to you even if you weren't doing this particular study!

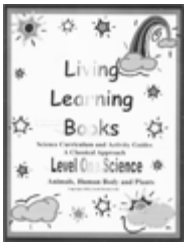
There are also lists of additional recommended materials, although these are not essential. Among them are five *Your Story Hour* audiocassettes, *Augustus Caesar's World, George Washington's World*, and some additional biographies.

Lessons start with *The Picture History of Great Inventors*, a new publication from Beautiful Feet Books. This is a colorful picture book along the lines of many of the Usborne books. It's strictly introductory in content. I suspect you will need to provide extra explanation for some of the pictures with younger children. This book serves as a "spine book" throughout the study—start here, then branch off into more depth on different topics. The selected biographies in the package make this very much a "story approach" to the history of science.

Explorabook, A Science Experiment Pamphlet, and seven activities at the back of the Beautiful Feet guide combine to provide substantial hands-on activity.

In addition to activities and reading, students record information in a science notebook they create, color pictures provided in the timeline kit and place them appropriately, do additional research in an encyclopedia, copy related Scripture verses into their notebooks, create and label sketches, and do reports and presentations. Of course, you will need to choose activities appropriate for the ages and abilities of your children.

This is a wonderful introduction to science. It teaches some basic principles, but even better for children in the elementary grades, it connects science to people and real life in fascinating ways. I believe this approach provides an excellent foundation for a classical education in science.



Living Learning Books
112 Heather Ridge Drive
Pelham, AL 35124
(205) 620-3365
e-mail: info@livinglearningbooks.com
www.livinglearningbooks.com

This new science curriculum is different at each of the three levels I reviewed, so be careful when you hear others talking about it to identify which level they are describing.

Each level should take about one school year to complete. All levels have two primary components: a teacher's guide and a student pack. The teacher's guide is the heart of the program at each level. It has detailed lesson plans, activity/project descriptions, suggested reading, narration instructions, Internet links, checklists, and reproducible masters.

The student pack is a nonreproducible set of pages (approximately sixty to seventy-five pages each) that correlate with each level. These are essential, so you will need a separate pack for each student working through the curriculum. Both the teacher guide and student pack come as three-hole-punched packets that you need to insert into binders. Students will need a two-inch binder that will hold these student pack pages, narrations, experiment observations, and other papers created through the course.

The first two levels use real books extensively, while the third level relies upon activities and experiments and incorporates information into the lessons within the book. All levels have writing assignments appropriate to the different levels.

For the first two levels, the publisher sells a pack of key books—all from Usborne—that can be used with the courses. These are not required, but you will have to obtain these or other books covering the same topics. You will also want to borrow or buy some of the other fiction and nonfiction books and videos listed as recommended reading/viewing under the various topics.

Level 1: Life Science was written for grades K through 2. Information about adapting it to work for grades 3 to 6 is available on the publisher's Web site. Three main areas are covered: animals, the human body, and plants. Animal units are introductory lessons on ants, butterflies, eagles, elephants, frogs, pandas, penguins, primates, seals, snails, snakes, and whales. Human

body units explore senses and some of the body systems. In plant units, children learn about leaves and roots, growing things, flowers, trees, and carnivorous plants.

Parents/teachers need to plan ahead to collect books and resources for activities, but nothing is very complicated at this level. Lesson plans follow a standard outline for each topic. You begin the lesson with reading about the topic. Students who are able to read independently, and all students maintain a reading log (reproducible form is included). Most student pack pages for this level are coloring pages. Many of them appear to be high-quality original artwork, although a few seem to be enlarged computer images with "pixellated" lines.

Optional enrichment activities tend toward arts and crafts and cooking more than experiments in the animal units, but experiments take center stage in the human body and plant units. Don't skip the Internet links. There are some great links to video clips, slide shows, pictures, games, and much more.

Charlotte Mason fans will appreciate the incorporation of narration into the lessons. Children do narrations about books or projects that can be taken by dictation, written by the children themselves, or some combination of the above depending upon the child's ability.

Vocabulary gets some attention, but you are really on your own to select words and to decide how to teach vocabulary.

Level 2: Earth Science and Astronomy targets grades 2 through 6. In many ways it is similar to *Level 1.* The basic format is the same, but it clearly addresses the needs of older learners. It has additional detail that I find very helpful: in the lesson plans it includes review questions, specific pages to be read from a recommended book, and suggested projects to correlate with each lesson. Projects are more complex than in *Level 1.*

Topics addressed under astronomy are rockets, solar system, stars and constellations, space shuttles, space stations, astronauts, and telescopes. Earth science covers day/night/seasons, the earth's crust, rocks and fossils, soil, disaster preparedness, volcanoes, earthquakes, the water cycle, storms, rivers and caves, and seas and oceans. *Level 2* also has an appendix of Scripture readings that relate to the various topics— use these or not as you choose.

The student pack still has some coloring pages, but it also has word search puzzles and pages for students to create their own planet books. The pack includes a reproduction of an American Red Cross *Disaster Preparedness* book that has both instruction and coloring pages.

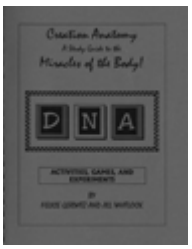
Level 3: Chemistry substitutes experiments and activities for reading because of the nature of the topic. Very few elementary level books, fiction or nonfiction, are written on this topic, so children learn mostly by doing, although some reading material is included in the student pack pages. This level is recommended for grades 3 through 6.

Lessons follow a new format: read the short introductory passage, conduct an experiment, record results of the experiment, review the reading passage, copy key words and definitions into their binders, and complete unit review pages.

Children start to learn scientific method at this level, although the focus is primarily upon observation and comprehension rather than analysis.

Parents will need to plan ahead to gather supplies for the experiments. Although they don't require expensive or complicated equipment, it will still take time to round up everything you need.

I especially like the reformatted teacher guide pages at this level. A left-hand column shows correlated student pages, reference pages in two Usborne and Kingfisher books that might be used, and project supplies. Clearly the author is continually working to improve the product as each new level is developed.



Media Angels Science
15720 South Pebble Lane
Fort Myers, FL 33912-2341
e-mail: mediangels@aol.com
www.mediaangels.com

Media Angels is a team of two authors, teacher Felice Gerwitz and geologist Jill Whitlock, both of whom are also homeschooling moms. Media Angels publishes science unit studies as well as a guide to creating your own such studies. The guide *Teaching Science and Having Fun!* is optional, but I will begin with it in case you prefer to do it all yourself.

Teaching Science and Having Fun!

by Felice Gerwitz

$12.95

Felice Gerwitz provides detailed science scope and sequence for grades K through 12 while also explaining how to create either topical studies or comprehensive unit studies based upon science topics. She stresses the importance of knowing and applying scientific method at all grade levels, emphasizing the vital role that experiments play in learning scientific method. Because of this, Felice offers extensive suggestions for creating lab activities for high school level science where they are required, including lots of budget-conscious substitutes. She adds extensive resource lists with commentary so that you can find other resources to flesh out your courses.

Teaching Science and Having Fun! addresses the big picture—Why teach science? How do you teach children of differing ages? What topics do you need to cover?—rather than attempting to offer complete course outlines. She also addresses problem areas such as what kind of microscope to buy. This is an inspiring, practical, and helpful resource for teaching science to children of all ages.

The educational philosophy of this book is reflected in all the Media Angels science books.

Creation Science: A Study Guide to Creation!

by Felice Gerwitz and Jill Whitlock

$18.95

This is one of a series of unit study guides from Media Angels. The other three volumes are *Creation Anatomy, Creation Astronomy*, and *Creation Geology* ($18.95 each).

This series very much reflects what I think science education should look like with its combination of real books, experiments, and other interesting activities that truly engage children in the study of science.

Each study should take about six to eight weeks to complete. The guides are set up for multigrade teaching, with activities divided into levels for K–3, 4–8, and 9–12.

These are actually unit studies that stretch beyond science, although they do not provide complete coverage of any of the other subjects. Activities for each level are divided under the headings of Science Activities and Experiments, Geography/History, Reading Ideas List, Vocabulary/Spelling List, Vocabulary/Spelling/Grammar Ideas, Language Arts Ideas, Math Reinforcements, and Art/Music Ideas. Science receives the most attention, with a good deal of background information for the teacher included in a "Teaching Outline" section in each book. (Read through this section in each book before you begin to teach the unit.)

Lots of extras are included in each guide: bibliography of videos, books, and computer resources; materials list; field trip guide; science experiment instruction pages; and reproducible activity pages.

Activity instructions are fairly well spelled out—they are much more than lists or outlines of suggestions. The suggested reading list includes titles that are referenced within some of the activities. Suggested books are a mixture of nonsectarian and Christian titles.

You will need to plan ahead to determine which activities to do and what resources you will need. All studies are presented from the young-earth perspective and rely on a literal interpretation of the Bible. Otherwise, the religious perspective is generically Christian rather than Protestant or Catholic.

I think you will want to use the *Experiment and Activity Packs* that complement the books ($12.95 each). While there are separate packs for each of the *Creation Astronomy* and *Creation Anatomy* books, there is a single pack to be used along with *Creation Science* and *Creation Geology.* Packs feature reproducible pages of activities and experiments with step-by-step instructions, questions, games, puzzles, a glossary, and more. Experiments are most appropriate for the elementary grades up through junior high since they do not require any of the mathematical analysis necessary for high school courses.

Stratton House Home Science Adventures
17837 First Avenue South #186
Seattle, WA 98148
(800) 694-7225
e-mail: hello@homeschoolscience.com
www.homeschoolscience.com

If you want to do activity-based science, but you don't have time or inclination to find experiments and gather materials, Stratton House kits are a great option. Designed by a homeschooling family, they can be used with children in grades 1 through 8. Materials for two children are included, but extra materials are available from the publisher.

While Stratton House sells kits on individual topics, their three-topic combo kits are the best deal. Two of these combo kits are available. One is *Astronomy, Birds, and Magnetism* ($66.50) and the other is *Microscopic Explorations, Insects, and Light* ($69.50).

These kits offer much more than science kits like those you find in children's stores. They include actual lessons in a parent guide—forty lessons in the first kit and forty-three in the second. It should take about a year to complete each kit.

Kits include the parent guide, reproducible worksheets for children, and the materials needed for the activities. For example, the first kit includes items such as binoculars, birdseed, bird identification book, star charts, and magnets. Lessons are laid out with clear, illustrated

instructions, so they are easy for even the inexperienced parent. The parent guide has additional ideas and topics for discussion to make the most of your children's curiosity.

Sample lessons are available on their Web site so you can check it out before buying.

More-traditional Courses for Junior and Senior High

Apologia Science series
by Dr. Jay L. Wile
Apologia Educational Ministries
1106 Meridian Plaza, Suite 220
Anderson, IN 46016
(888) 524-4724
(765) 608-3290
e-mail: mailbag@highschoolscience.com
www.apologia.com

Dr. Jay Wile is the primary author of most of Apologia's *Exploring Creation* science curricula for junior and senior high. These Apologia courses are among the few options for college-prep lab science courses that do not require a parent to teach the courses. Another factor that makes them popular is their very reasonable cost.

Apologia offers courses for general science, physical science, biology, chemistry, and physics. Among them are both standard courses and supplemental ones that provide the equivalent of AP courses. I appreciate the options that accommodate a range of student goals, from the nonscience oriented student who just wants the basics, through the ambitious college-bound student who wants AP level courses. Some courses also offer choices of lab experience options to offer more activity for ambitious students or more limited options that might fit a family's limited financial resources.

Most courses are available in traditional textbook format or in new CD-ROM versions. Textbook courses come as two-volume sets ($75.00 to $85.00 per course). The first book is the hardbound primary text; all texts have color illustrations. The second book is a softbound solution and test manual with complete answers and explanations for questions from the student book and the tests. Step-by-step instructions for lab experiments appear in chapters alongside the concepts they illustrate.

CD-ROM versions ($65.00 per course) contain all of the textbook and solutions manual content plus multimedia video clips, animations, pronunciation guides, and other helps. They also have nifty indexing so you can simply click on an index entry to go to that topic in the correct module on the CD.

Those who choose the textbook version of one of the second edition courses (*Physics* and *Chemistry* thus far) can purchase a companion CD-ROM that has only the extras not already contained in the textbook ($15.00 per CD per course). Icons in the textbook alert students to available video clips they might want to view.

A Christian worldview permeates these courses. Dr. Wile brings in not just creationist views but also other scientific issues and ideas in relation to Christianity (e.g., geocentric versus heliocentric viewpoints).

Courses were written for independent study. Dr. Wile's conversational style of writing makes these texts much easier reading than most others. He speaks directly to students, assuming they will be working through the courses on their own—a realistic expectation in most families. Brief information for parents/teachers is at the beginning of the solution and test books. Free support is available via e-mail, voicemail, fax, and snail mail.

Students who need more oversight or outside prodding might want to enroll in one of the Internet courses based on these texts. Apologia has information about such courses in their catalog and on their Web site.

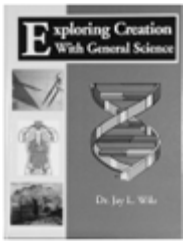
In student textbooks, the text typestyle is large compared to other science texts, but this makes it easier to read and less intimidating. (That also means there has to be slightly less content than in an equivalently sized book with smaller type.) Books are divided into modules rather than chapters. Within each module are “on your own” questions and problems. Students are to answer these as they proceed through each section, and answers can be self-checked within the textbook. At the end of each module is a “study guide” that has questions and problems for which answers are in the solutions and test book. A test and answer key for each module is also found in that book. Students also need to keep a separate lab notebook to record observations and conclusions from their experiments.

All textbooks have glossaries and indexes plus other helps, such as the periodic table and lists of elements and their symbols. At the beginning of the book are lists of lab materials needed. Dr. Wile specifies lab materials that, for the most part, can be found at grocery and hardware stores. However, the biology and chemistry labs need some more sophisticated equipment, such as a scale, microscope, and test tubes. Using nontraditional lab equipment means students will not be familiar with the more complex scientific equipment, but this should be a very small liability given the practical advantages of these types of labs. Lab equipment and resources for high school level courses are available in various sets either from Apologia or from Nature's Workshop Plus!

Exploring Creation with General Science and *Exploring Creation with Physical Science* are junior high courses targeted at grades 7 and 8.

Exploring Creation with Biology, Exploring Creation with Chemistry, and *Exploring Creation with Physics* meet requirements for high school lab courses. However, Apologia also offers advanced courses in biology, chemistry, and physics that, combined with the foundational course, cover the content of an Advanced Placement (AP) course.

The advanced courses are titled *Advanced Chemistry in Creation, Advanced Physics in Creation*, and *The Human Body: Fearfully and Wonderfully Made* ($75.00 to $85.00 per course). These are similar in format to the foundational texts, but the first two courses are illustrated only in black-and-white. CD-ROM versions of the advanced courses are scheduled with *The Human Body* due first and others to follow over a two-year period.

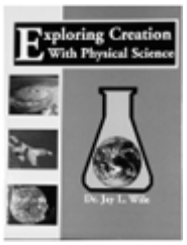


Exploring Creation with General Science

This is a broad general science course for junior high students that includes a significant amount of lab work. The course is set up in sixteen modules that should take about two weeks each to complete.

Topics covered include the history of science, scientific method, how to perform experiments, simple machines, archaeology, rocks, minerals, fossils, geology, paleontology, evolution and interrelated theories (uniformitarianism and catastrophism), living organisms, classifications, the human body, and organisms and energy.

Exploring Creation with Physical Science

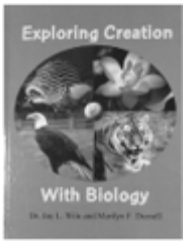


This large, 450+ page text is the foundation for the most user-friendly, yet academically challenging, physical science course for homeschoolers of which I am aware. It qualifies as a lab course, with extensive experiments and recording activity. In fact, Dr. Wile begins the first lesson with an experiment. He carefully details how to perform the experiment and the expected results. He describes possible corrections if it's not working as it should. Then he uses the results as a platform to provide a basic explanation of molecules, atoms, and chemical reactions.

The book is divided into sixteen modules, each of which should take about two weeks to complete. Topics covered include "the basics," air, atmosphere, water, the hydrosphere, earth and the lithosphere, weather, motion, gravity, electromagnetic force, electrical circuits, magnetism, atomic structure, radioactivity, waves and sound, light, and astrophysics.

While the content is appropriate and challenging, it is not as difficult as some physical science texts. For example, in discussing chemical bonds, it addresses overall positive and negative charges without going into valences as do some physical science courses.

Exploring Creation with Biology

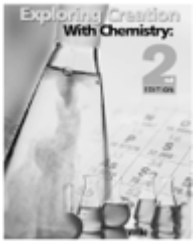


This text is coauthored by Marilyn F. Durnell. It is very similar in format and presentation to the physical science course. While it is traditional in its approach for the most part, it does not include study of the human body. Instead, human anatomy and physiology are covered in a separate course, *The Human Body*, which Apologia considers an advanced biology course. Students preparing for AP exams or wanting to list an AP course on their transcript need to complete both courses.

Clear explanations teach concepts in a friendly fashion without oversimplification. Questions provoke thought and not simply recall.

With this text, lab activity becomes more demanding, although you have a choice about how much of it your student needs to complete. There are three levels of lab activity: household labs require minimal equipment and should be completed by all students; optional microscope labs require a microscope and slide set (kit available for $285.00); dissection labs

are also optional, but the dissection kit is only $40.00. Instructions for all labs are found in the text.



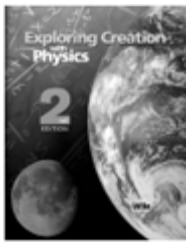
Exploring Creation with Chemistry

This text covers essentially the same content as most high school chemistry courses. Algebra 1 is a prerequisite. While Dr. Wile assumes that the student has this math background, he does do some math review. Solutions to test questions include the math work, so students weak in math can figure out what they might have missed. This sort of help is very rare in chemistry courses. The text presents concepts and guides students through practice exercises before leaving them to work on problems.

Dr. Wile has done a great job constructing lab activities with low-cost equipment while providing enough experience for a solid college-prep course. The labs are exacting in detail, achieving a great deal of precision with minimal equipment. *Nature's Workshop Plus!* sells a basic equipment set for this course ($55.00). All the chemicals you need are items available at the grocery or hardware store. However, the second edition of the text for this course added optional extra lab work for which you need a "secondary lab set," available from MicroChem Kits, that includes more specialized chemicals.

One negative point: chemicals are frequently introduced by formula but not by common names. This seems odd in a text that is generally good at making practical connections for students. However, Dr. Wile explains the reason for this: "When you introduce every chemical with its name, the student is quickly overwhelmed by the names and thus ceases to remember them. Therefore, I only introduce the names of practical chemicals that the student will encounter in everyday life. As a result, the student remembers the important names and does not get overwhelmed with chemical names he or she will never encounter."

Apologia's *Advanced Chemistry* course combined with this foundational course is equivalent to an AP or university level chemistry course.



Exploring Creation with Physics

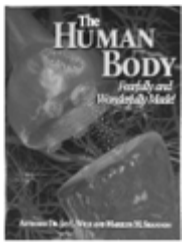
This course will be quite challenging for students who attempt to work independently unless parents are knowledgeable and can help from time to time. However, it is still a good course for the student who does not intend to take much science in college. Coverage is adequate but not as complete as in some other high school physics texts. For example, there is no treatment of the properties of matter, heat transfer, atomic and nuclear physics, relativity, or quantum physics. (Such topics are covered in some, but not all, high-school-level physics courses.) These shortcomings not withstanding, Dr. Wile's casual and illustrative prose goes a long way toward helping both teacher and student grasp inherently difficult subjects.

Science oriented students should consider adding Apologia's *Advanced Physics* course. Together the two courses are equivalent to an AP or college level physics course.

Lab activities are fairly simple for a high school physics lab course. Lab experiments seem to be designed to illustrate principles more than to provide opportunities for serious scientific work. Nevertheless, this course will satisfy most college entry requirements for a physics course with lab.

This is a math-based course; prerequisites are algebra and beginning trigonometry. However, the math is not overly complex, and example problems are worked out in clear and thorough detail. A primer on the subjects of conversion of units, scientific notation, and measurement precision and accuracy is available for free by mail or on the Internet in case students need to review these topics.

The second edition of this text, released in 2004, includes additional experiments and practice problems plus icons corresponding to multi-media content on the companion CD.



The Human Body: Fearfully and Wonderfully Made

by Dr. Jay L. Wile and Marilyn M. Shannon, M.A.

I'm including a brief review of this "advanced biology" course since I suspect many parents will want to cover human anatomy and physiology as part of their teen's biology instruction. However, be forewarned that this is a challenging course with some content (especially the large amount of vocabulary to be learned) more likely to be encountered in a college level course rather than a high school course. That's why it is suitable for AP test preparation!

Along with the student text and Solutions and Tests book (which comes with the student text for $85.00), students will need a microscope, a set of prepared slides, a dissection and specimens kit (tools, cow's eye, cow's heart, and fetal pig), and *The Anatomy Coloring* book by Kapit and Elson. All of these resources are available through Nature's Workshop Plus! If students opt not to do all the lab work, they should still purchase *The Anatomy Coloring Book* since it has far more detailed illustrations than does the text. As with other Apologia courses, students need to keep a separate lab notebook.

Although this is a very challenging course, it is designed such that students can complete all work independently. The publisher recommends it for twelfth grade but says it can also be used from tenth grade on if students have the prerequisites.

The Rainbow

by Durell C. Dobbins, Ph.D.
Beginnings Publishing House, Inc.
328 Shady Lane
Alvaton, KY 42122
(800) 831-3570
e-mail: dcdobbins@aol.com
www.beginningspublishing.com

Complete year 1—$254.00, year 2—$143.00, text and *Teacher's Helper*—$96.00, text only—$80.00, lab workbook—$18.00

Serious science is coupled with a lighthearted approach and lots of hands-on activity for this two-year course targeted at junior high level. Written specifically for Christian homeschoolers, it has a beautiful full-color textbook (softcover) and huge lab set with all sorts of interesting items. The course is also unusual because the text is intended to be used for two years. In the first year students study physics and chemistry, and in the second year they study biology and applied science.

The Teacher's Helper is a teacher guide for both the text and the labs, covering both years. The first year's lab set includes both durable equipment and consumable supplies plus a lab workbook. For the second year, you need additional equipment and supplies and a new lab workbook, all of which is sold as a "year 2" set.

I really enjoy Dr. Dobbins personal, friendly writing style, and I think most junior high students will too. Here's a short excerpt to give you the flavor:

> So you've given up on dissolving oil and vinegar together without killing people, but you are still convinced you are a smart chemist. So what do you do? Like every other good chemist in the world, you pick up the bottle of salad dressing and shake it really hard, then fret to remove the cap and pour the dressing before it separates again. But unlike the untrained nonchemists, you know the word for what you just did. You created a *suspension.*[1]

Dr. Dobbins explains concepts simply, frequently relating concepts to familiar experiences such as the above. Each small section has "exercises"—questions that can be used for discussion or written assignments.

The Teacher's Helper outlines a schedule for three days per week for thirty-two weeks per year. It also has the purpose of each lesson, section review quizzes, answers, and troubleshooting ideas in case a lab experiment doesn't turn out as it should. A separate *Lab Workbook* for the student gives detailed (and often humorous) instructions for the weekly experiment.

The complete kit includes a neatly packaged set of lab materials with everything needed to carry out the experiments, including such items as safety glasses, a marble roller assembly, a baseball, resistors, magnets, light bulbs, glass tubing, syringe, PVC tubing, dye, and much more. You could conceivably collect your own materials from the list provided on the publisher's Web site, but it's such an odd assortment that you would be better off purchasing the kit from Beginnings.

If you have more than one student you will need to add an extra lab workbook. Each lab workbook comes with a pair of safety glasses, an essential item for each student. Other than that, students should be able to work cooperatively on the experiments with what comes in the kit. Those using this program with a larger group need to order multiple kits.

The curriculum is obviously Christian with its numerous references to God. Dr. Dobbins's treatment of the theory of evolution is interesting. He says, "In this text we will attempt to teach the general theory of evolution because a good education in the sciences requires it. We present it as a theory … which we ourselves do not accept" (p. 136). However, it does not seem to me that evolution is taught in this text so much as it is undermined. Dr. Dobbins does not take a position on the age of the earth.

Another sensitive subject might be human reproduction, but it is tastefully and conservatively explained.

Overall, I think this course prepares students with a solid foundation for more in-depth high-school-level science courses. Beginnings also has a high school course, *The Spectrum Chemistry.* I didn't have time for a complete review of this course, but the format and tone are the same as *The Rainbow.* The content appears to be solid college prep (the author claims "honors course" level) with plenty of lab work. There's a separate lab book and set of equipment. Like Apologia's course, it is written directly to the student so he or she can work independently.

12

Unit Studies and All-in-One Programs

Textbooks were created for classroom management purposes—not because authors prefer to write them. Too often textbooks are written by committees, warped by state and federal goals, censored by publishers' agendas (with which we might or might not agree), written with no sense of style, and boring beyond belief. Of course, there are some exceptions, but not many. And even good textbooks reflect a compartmentalized approach to learning. Math stays in one book, while language remains in another. Spelling is in yet another compartment, and literature has to stay separate from both spelling and language.

Making Learning Come Alive

Real life is not compartmentalized. Unit studies try to make learning more like real life by bringing a number of subjects together around a central theme for study. Unit study themes are infinite. Some follow historical themes, some use character traits, some use novels, some use science topics, and some use Scripture.

Unit studies can be narrow topical studies, such as a single unit on the theme of horses. In such a study, children might study breeds of horses, the history of their development, how horses have been used through history, horse anatomy and physiology, and famous horse stories. This sort of study might cover science along with some history and language arts.

Other unit studies are more comprehensive. Most of these larger unit studies are at least year-long programs that cover history and science completely, while offering varying degrees of coverage of language arts and math. Most have arts and crafts mixed in, and many have strong religion components.

Many parents, but especially Perfect Paulas, like the idea of unit studies but find it overwhelming once they get into it. In many unit studies, parents must choose which books to use, find those books at the library or figure out substitutes, choose among a number of activities, organize all of this, and then keep records of everything. The insecurity and worry about making "wrong" choices paralyzes them, and they quickly return to safe and predictable textbooks. Fortunately, some unit studies have taken this into account and provide much more direction and fewer choices—features that make it possible for worriers to still take advantage of unit studies.

Addressing Learning Style Needs

Unit studies can be a marvelous way of meeting all the different learning style needs of children while providing an education vastly more interesting than what comes out of standard textbooks.

While unit studies vary in the types of activities they include, there are almost always some hands-on and multisensory activities to engage Wiggly Willys. Sociable Sues usually thrive on the interaction that is so much a part of most unit studies. Although Perfect Paulas might be uncomfortable with unit studies that change the lesson structure all the time, they generally do well with ones that follow a somewhat predictable format and spend plenty of time developing academic knowledge and skills (as opposed to continual craft and cooking projects). Competent Carls usually love the independent reading and research required by many unit studies.

By selecting unit studies with the elements that best fit your children, then selecting the appropriate activities for each child, you can bring everyone together studying the same topics.

Unit studies also work to overcome learning style weaknesses. After children have already been introduced to a topic or skill via a method that is best for them, choose other activities from the unit study that have them apply that knowledge or skill in ways that are not as comfortable. For example, Sociable Sue learns about a history topic as you gather everyone together to read and discuss a biography related to the historical event. Sociable Sue learns the background and some interesting details of what happened in a way she enjoys. After that, you can assign her to do further independent reading on the same topic, requiring her to come to you to do a narration about what she has read. She would have a difficult time if she were to begin with the independent reading, but sandwiching it between two interactive activities makes it more palatable.

These Are Not Your Only Choices!

I have selected some of the best unit studies on the market as examples of different types available. There are many more excellent ones I would have included if this book were about the top 200 or 300 products! Names and short annotations for more unit studies follow the reviews.

Five in a Row
by Jane Claire Lambert
Five in a Row Publishing
P.O. Box 707
Grandview, MO 64030-0707
(816) 246-9252
e-mail: lamberts@fiveinarow.com
www.fiveinarow.com

$19.95–$24.95 each

Five in a Row volumes have been written for preschool through eighth grade levels, although they are best known for use in the early grades since that was the target of the original volumes. Consequently, this is a less intense approach to unit study than *KONOS, Weaver, Tapestry of Grace*, and others that were designed to cover all grade levels.

Let's first look at the basic *Five in a Row* volumes written for children ages four through eight. All four volumes available in this series follow the same format. For each volume, author Jane Claire Lambert has selected a number of outstanding books for children, then built a “mini” unit study around each one. Volume 1 has nineteen units, volume 2 has twenty-one units, and volumes 3 and 4 each have fifteen.

Each study should take one week, with more or less time spent each day depending upon which lesson elements you choose to use. While there are no biblical references in the primary volumes, *Five in a Row* repeatedly teaches positive character qualities such as forgiveness, compassion, and honesty that tie easily to Scripture. Likewise, the selected stories are not overtly Christian, but reflect godly principles. For those who want more explicit Christian "connections," a separate *Five in a Row Bible Supplement* ($17.95) contains more than two hundred Bible lessons relating to the fifty-five studies in volumes 1 through 3.

Examples of selected books are *The Story about Ping, Who Owns the Sun?, Mike Mulligan and His Steam Shovel, Clown of God, Katy and the Big Snow, Wee Gillis, Make Way for Ducklings, All Those Secrets of the World, Harold and the Purple Crayon*, and *Gramma's Walk.* You will need to purchase or borrow the required storybooks for each volume. However, Five in A Row Publishing also sells packages of these books if you prefer to buy them all at once.

Each story is to be read aloud every day for one week (five days). You select activities for social studies (the term loosely used to cover character qualities and relationships in addition to geography, history, and cultures), language arts, math, science, and art to build lessons from the story. There are numerous hands-on activities and projects, although much of each detailed lesson plan is presented as "talk about this" type activities. An example of the activities is "story disks" in each volume, one per unit. These are to be cut out and laminated (by mom), then used by students to locate where stories take place on a world map. These disks are also available as a ready-to-use set, printed in color and laminated for $15 for the set of fifty-five.

You can choose to select only one subject area per day or select a variety of activities from among the subject areas. Activities range from those appropriate for nonwriters and nonreaders to those for children who have mastered these skills. Thus, you can use the lessons to meet the academic needs of younger and older learners up through about third grade level.

This is not intended to be a complete curriculum for math and language arts. It does not teach phonics, writing, or math in any sequential progression. In fact, you are encouraged to use stories in whatever order you please. (A calendar linking stories to calendar events suggests a possible progression you might follow.)

For younger children, the material might be more than adequate to meet their learning needs. For six-and seven-year-olds, the social studies, science, and art are likely to be much better than they might get from textbooks, so you might want to add only basic phonics and math, and possibly other language skill development for the oldest children.

An index lists what is covered under each subject area, sometimes broken down further under subheadings. This helps you if you have specific goals of your own. A reproducible planning sheet helps you with weekly lesson plans. Instructions for activities are quite detailed. Lambert includes valuable tips on questions to ask your children to guide discussions. *Five in a Row* is very user-friendly, especially for the inexperienced homeschooler.

Other *Five in a Row* volumes are available for older and younger children. Those with preschoolers might want to use *Before Five in a Row.* This volume was developed for children ages two to four. Plenty of activities center around twenty-three books written for young children. The format is somewhat similar to that of the volumes described above.

Those with older children (approximately grades 3 through 8) should check out *Beyond Five in a Row*, volumes 1–3. These three volumes were authored by Becky Jane Lambert, daughter of the original series author, Jane Lambert.

These are excellent one-semester courses. Four books for each volume are the foundation for each unit study. For example, volume 1 includes *The Boxcar Children, Thomas A. Edison—Young Inventor*, *Homer Price*, and *Betsy Ross—Designer of Our Flag.* Subject areas covered include literature, some language arts, history, composition, science, and fine arts.

Lessons are set up so that you read a chapter from the book, then work through your choice of the suggested activities. These vary greatly from day to day.

Quite a bit of historical and scientific information is included within the book, but you need to use outside resources for additional research. Many such resources are suggested in the lessons. Lessons often include "Internet Connection" activities for students to do research at a particular site or sites on a topic related to the study.

About half of the lessons include an essay question; you will need to tailor requirements on these to suit the age of each student. Occasional "Career Paths" sections help students consider career possibilities and offer suggestions for further research and/or experience in the field. Timelines are recommended as a means of helping students understand chronological relationships between people and events. Numerous hands-on activities are included: art projects, cooking, science experiments, learning sign language, etc.

A list of all topics covered (a form of scope and sequence) is located at the back of each book; this will help you for both planning and tracking your accomplishments.

Further Up and Further In
by Diane Pendergraft
Cadron Creek Christian Curriculum
4329 Pinos Altos Road
Silver City, NM 88061
(505) 534-1496
e-mail: marigold@cadroncreek.com
www.CadronCreek.com

$50.00

Subtitled *A Literature Based Unit Study Utilizing C. S. Lewis's The Chronicles of Narnia*, this recent entry into the unit studies field provides detailed lesson plans for teaching children in grades 4 through 8, although it might be adapted to suit younger and older students.

While the publisher considers it adequate coverage for all subjects except math, grammar, and spelling, I think coverage of history is a little light. It is very strong in Bible and in character education even though the latter is not a specified subject area.

You will need the seven-volume *Chronicles of Narnia* (1995 printing of the Scholastic edition is referenced in this study), access to the Internet or an encyclopedia, a dictionary, a Bible, a Bible concordance, and a thesaurus. Additional recommended resources that are used so frequently that you ought to own them are *Genesis: Finding Our Roots* by Ruth Beechick, *Surprised by Joy* by C. S. Lewis, *Poems* by C. S. Lewis, and *Tales from Shakespeare* by Charles and Mary Lamb. Other books and videos are recommended for each of the units along with a grammar and composition handbook such as one of the *Write Source* books for all units.

Some shorter readings, such as poems and portions of *Hamlet*, are actually reprinted in the back of the book along with some recipes and games. Another useful help is found on pages 261–64; this is a "Subjects Covered" list that organizes topics covered under subject area headings for quick reference.

Art activities, cooking projects, game ideas, and field trips are included in this unit study, but, overall, it is more book-based than activity-based like *KONOS* and some of the other unit studies. For example, most science assignments are reading rather than experiments. When the topic of light is introduced, students are told to use an encyclopedia or book to study light. They are given a few questions to explore and some vocabulary words to define.

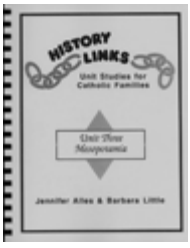
The study is arranged with one unit per book in the *Chronicles* series. Each unit should take about one month, so that leaves time for extending units if you wish.

A planning guide at the beginning of each unit lists materials and resources you will need, topics for which you will need research information (from encyclopedias, books, or the Internet), suggestions for field trips, and Bible memorization. Then the study of each book is broken down into four sections so that you are reading four chapters per week. Lessons are given for each chapter. Subjects, other than vocabulary words for every lesson, do not seem to be covered in any consistent pattern but depend upon content of each chapter. Thus, in one week there are assignments for history, English, and art one day; Bible, English, science, cooking, and critical thinking the second day; art, English, critical thinking, and history the third day; and critical thinking and cooking the fourth.

Some activities need to be done together, but many can be done by students working independently.

Students use a three-ring binder and divide it into sections to create notebooks for vocabulary, plant studies, and animal studies, plus notebooks for each of the *Chronicles* books. This could be done with ten separate spiral notebooks, but the binder keeps it all in one place.

Further Up and Further In is likely to appeal to families who love to read together, enjoy variety, and who have children who like to do independent reading and research.



History Links
by Jennifer Alles, Barbara Little, and Kim Staggenborg
Wooly Lamb Publishing
P.O. Box 411
Dickinson, ND 58602
(701) 260-2777
e-mail: woolylamb@worldaccessnet.com

$15.00–$20.00 per volume

History Links is a Catholic approach to unit studies that can be used to teach preschoolers through high school level. Thus far there are nine volumes available, with others in development. Completed volumes are in chronological sequence, although you need not use them in that order. Most volumes should take from two to four months to complete, so you would complete approximately three volumes per school year. The first unit, *General Studies*, should take only one to two months. Apparently some families using *The Well-Trained Mind*

approach are completing four or five units per year, albeit with more superficial coverage of each time period.

History Links is designed such that you can go back through the entire series at least once more, using the more challenging activities suggested for upper grade levels. The units available thus far are *General Studies, Creation, Mesopotamia, Ancient Egypt, Ancient Israel, Ancient Greece, Ancient Rome: The Republic, Ancient Rome: Pax Romana*, and *Ancient Rome: The Roman Empire. Early Medieval* (at least two units long) is in the works.

This is truly a family-designed curriculum. Activities are presented for four levels: "P" for preschoolers, "1" for kindergarten and early elementary grades, "2" for intermediate through middle school levels, and "3" for advanced junior high through high school. In addition, ideas for keeping toddlers occupied are included at the bottom of many pages. For those enjoying new babies, there are suggestions for following the "baby track" that pares down the more time-consuming or messy activities. While *History Links* works well as a family curriculum, it might also be used in co-op settings for once or twice a month gatherings.

You will need reference resources: an encyclopedia, a Bible, a dictionary, a globe or world map, and the *Catechism of the Catholic Church.* Much of the resource information might also be found on the Web. Some other books (e.g., *Usborne Book of World History, Usborne Book of the Ancient World, English from the Roots Up, National Geographic* magazines, *The Antiquities of the Jews* by Josephus) are recommended but are not essential. The authors purposely tried to keep costs low by having just a few essential resources, then recommending materials that you can usually get from the library or online.

The units also incorporate ideas from *Teaching Writing: Structure and Style* (Institute for Excellence in Writing)—another of my top picks, but the authors encourage you to purchase the seminar itself.

History Links provides complete coverage of history, religion, critical thinking, research, music, art, and crafts. While it also includes science, language arts, and some math, activities in these areas should be considered supplemental. The authors suggest using other science unit studies between some of the *History Links* units to maintain the unit study approach while ensuring adequate science coverage. (Consider science units from Media Angels for this purpose.) I expect that *History Links* should take about one to two hours per day, depending upon which activities you choose.

Everyone needs to start with *Unit One: General Studies.* The first half of this book explains the methodology used through all the units. The second half presents brief introductory studies on the four key areas covered within all the units: history, geography, archaeology, and theology.

The same format is used in these introductory studies and throughout all the other units. Each unit begins with prayers and hymns to learn, vocabulary lists, punctuation and capitalization items to be learned, a "Library List" of recommended resources (books, videos, recordings, periodicals, Web sites, encyclicals, church documents, etc.). The bulk of each unit or book is presented under subtopics with brief introductory, background, or explanatory information followed by activities coded by subject area and level of difficulty. Extensive appendices in most volumes include many of the source documents you might need. The more recently published units also include resource guides that help you select age-appropriate materials for your children.

Activities address all types of learning styles, but those for the upper two levels direct students toward independent research, reading, and writing much more than traditional curriculum and even more so than some other unit studies. For example, here are two activities from *Ancient Rome: The Roman Empire*:

- "Research Arianism. What belief did Arians promote? What role did Constantine play in this conflict? Who was the staunchest opponent of Arianism? What Church council was held to settle this dispute?" (p. 37).
- "Do you think it is true to say the ancient philosophers lacked 'faith, humility, and chastity? (Although we have already studied the works of Cicero, advanced students might want to do a research project and locate Cicero's and Ambrose's De Officiis to compare them.)" (p. 42).

While these type activities might seem very challenging, I believe they provide the best type education. In addition to developing academic skills, they help students think through and develop a thoroughly Catholic worldview. They draw on classical education ideas in the use of primary sources, comparison of ideas, and focus on important questions in addition to coverage of information.

Lest you think all the activities a bit overwhelming, here are two examples of activities for younger students:

- "Divide an orange, cantaloupe, or other fruit. Draw a line around it, and then cut it on the line. Then discuss the concepts of hemisphere and symmetry. Did Diocletian actually divide his empire in 'half'? Did he divide the Empire along a line of symmetry?" (p. 31).
- "Constantinople is now called Istanbul. Why? (The Ottoman Turks renamed it.) Locate Istanbul, Turkey, on a map. Why was this such a desirable location for a city?" (p. 36).

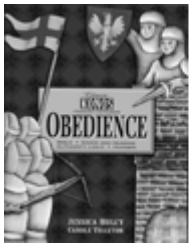
Note: Children will have already learned something about Constantinople before tackling this activity.

Like other unit studies, *History Links* requires parental preparation and presentation time. You will probably need to work quite closely with young children, while older students will need occasional assistance. Once students have developed their own research skills, they can work more independently than they might at first. However, you will not have simple answer keys to consult to "check" their work.

Of course hands-on activities like art projects and cooking will demand more of your time, but you can choose how many such activities to undertake. With younger students, you can research and read material together, then choose whether to have students do written work or discussion. Such choices should depend upon their abilities and your time.

One of the unique benefits of *History Links* is that because it is presented in small units, it's a great way to try out unit study without making an expensive commitment.

KONOS Character Curriculum
P.O. Box 250
Anna, TX 75409



(972) 924-2712
e-mail: info@konos.com
www.konos.com
Volumes 1, 2, and 3—$95.00 per volume, timelines—$59.95 per volume, curriculum/timeline combo—$144.95, index—$20.00, *KONOS In-A-Box*—$175.00 each, *KONOS In-A-Bag*—$90.00 each, *History of the World: Year One* or *Year Two*—$150.00 each

KONOS features character traits as unit themes in their unit studies for children in grades K through 8. There are also two high-school-level volumes that I will discuss later in this review.

Subjects included in *KONOS* are history (primarily American history), Bible, social studies, science, art, music, drama, practical living, health, critical thinking skills, and character training, as well as some language and math. The authors suggest we use other math and language programs as needed. If you use all three volumes of *KONOS*, you will cover material typically covered in history and science programs in elementary grades with the exception of world history, which *KONOS* reserves for higher levels.

Because the authors believe children learn best by "doing," this program is strong on activity—an ideal program for Wiggly Willys. The real strength of *KONOS* is in the number of activities from which you can choose. There are *many* more ideas than you can possibly use. Some people are overwhelmed at the choices, but the many alternatives allow you to choose how much time you spend, the amount of hands-on activity, field trips, books, etc. that fit your situation.

Lesson plans list materials and preparation needed, then recommend activities for younger, middle, and older children. The lesson plans are a tremendous help to those who are overwhelmed by too many choices and also to those who want just a little help in quickly sorting through all the ideas. *KONOS* lesson plans provide structure, yet they leave much room for individualizing. Moms who prefer a set structure and routine might have trouble using *KONOS*, while those who prefer variety will likely enjoy it.

While Volume 1 should probably be the first volume used with children in grades K to 3, any volume, including the third, could be used at any level. Each volume of *KONOS* can be used for two years. *KONOS* provides detailed background information for some activities, but not all. Library books and other sources will be needed to round out the lessons. Detailed lists of resources and activities are under each heading. It is necessary to plan ahead to get books and other resources that you will need. For those who have difficulty getting books from a library, *KONOS* has arranged with Lifetime Books, Alabaster Books, and other companies to carry books that specifically correlate to *KONOS* units. With so many titles to choose from, you can be guaranteed the availability of appropriate resources.

Because *KONOS* covers history in a nonsequential fashion, you should use timelines to tie historical events together coherently. You can make your own, but *KONOS* sells beautifully laminated timelines that coordinate with each volume of the curriculum, plus a *Bible Timeline.*

The *KONOS Index* ($20.00) is a separate book that shows which topics are covered where in each volume of *KONOS.* This is most valuable to those who have accumulated two or more

KONOS volumes or who want to use *KONOS* activities to jazz up their traditional curriculum. If you want to locate information on a particular topic, the *Index* will help you find it quickly.

Those who like the methodology of *KONOS* but feel overwhelmed with what it requires from the parent/teacher should love *KONOS In-A-Box.* There are two of these nine- to eighteen-week unit studies derived from the original *KONOS* volumes. The titles of the two volumes are *Obedience* and *Orderliness.* The *Obedience* unit contains the teacher's manual/curriculum (also sold separately), craft materials (e.g., copper foil, wire, brads, whistle, tapestry set, fake jewels), eight resource books, and time-line characters—all packaged in a sturdy cardboard case with carrying handle.

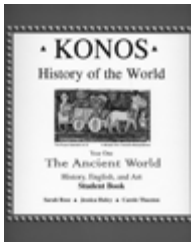
They are laid out with detailed, daily lessons, and they come with just about everything you need. No more frantic trips to the library and the craft supply store. *KONOS In-A-Box* covers the same subjects as the original *KONOS* but is more comprehensive than the original, particularly in the area of language arts and literature where students are taught how to write and to analyze literature. Again, math and phonics are not covered.

There are still some choices to be made. The studies can meet the needs of students in grades K through 8, but you must choose which activities to require of older and younger students. For example, when it says "Write five simple sentences on index cards about what you learned yesterday about light," you might ask your third grader to write only three sentences, then spend time with your kindergartner on basic reading skills while older students write their sentences.

While some preparation time will still be necessary, it will be a fraction of that required for the original *KONOS.* If you've always wanted to try unit studies, but felt that it might be too overwhelming, this is a terrific way to try it out. Many families find that after using *KONOS In-A-Box*, they can easily handle the regular *KONOS* volumes.

Similar in concept to *KONOS In-A-Box* is *KONOS In-A-Bag.* There are two units available in this newest format that *KONOS* calls its "New Culture Curriculum Series." The two "bags," *Russia: The Land of Endurance* and *Africa: The Land of Stewardship*, couple country or continent themes with a character trait identified with each one. A detailed two-hundred-page curriculum manual can be purchased on its own, although it is included in the bag that also has all the items needed for the study. For example, the *Africa* tote bag includes the manual, a beautifully illustrated Dorling Kindersley book, a map, and five craft kits with supplies for three children.

The culture series differs from the box series in that the curriculum does not include the in-depth writing lessons or literary analysis.



KONOS History of the World

Those with older students who would like to continue this style of teaching through high school should check out *KONOS History of the World*, written for high school students. *KONOS* for high school is quite different from the younger-level volumes in that it is written directly to the student rather than the parent. It includes a student book, a

teacher's guide, and a timeline/map kit. Each volume covers Bible, history, English, and art for a full school year, but students can easily gain credits in drama, and geography as well.

As with other *KONOS* volumes, students are not expected to do all activities but should work with parents to select those necessary to provide sufficient work in each subject area and to cover the main topics adequately.

The beginning section of *Year One* teaches students how to study and how to use this curriculum. (*Year Two* repeats the same information in case students are starting there.) Each lesson follows the same basic format. It begins with the "Lesson Focus," listing the main ideas to be learned. Bible study is next, with passages to read, study, and memorize. The map/timeline packet includes full-color, self-sticking figures that students cut out and place on the timeline as they study each civilization—interpreting the details of the figures themselves serves as a review or study prompt. For example, you might want to ask your children why Diogenes is pictured inside a barrel?

Students construct a large map with the pages included in the packet. Vocabulary words for each lesson are to be written on three-by-five-inch cards, then studied and reviewed.

A number of other resources are used for study, a few of which are used so frequently that students should own them. In addition to some basic study tools and reference works, students should own either *Streams of Civilization* (Christian Liberty Press) or *A Picturesque Tale of Progress*, which is out of print but worth trying to obtain through a book search service. The other recommended books are worth owning but not essential. Some videos are also recommended.

Activities for each weekly lesson are listed. Some are marked with symbols indicating that they are writing, art, or map activities. A mortarboard indicates advanced activities college-bound students should tackle. Record-keeping boxes next to each activity allow students to record which assignments were done and the time actually spent doing them. This allows students to keep track of hours for credits.

Students also maintain a notebook in a three-ring binder that includes a journal, book lists, weekly schedules, essay questions, English reports, and tests. Evaluation questions at the end of each section help both student and parents assess progress. There are very few questions that require exact or predictable answers, but those answers are found in the teacher's guide. Students are also told how to create a portfolio of their work that can be used to validate their high school studies for high school graduation or college entry.

The entire curriculum is oriented toward developing a biblical (Protestant) worldview with a deep understanding of the impact of philosophy and religion throughout history. Worldview ideas reflect a conservative political viewpoint. Students do a great deal of reading, and there are numerous opportunities to write stories, essays, and papers. Rigorous academics are balanced by *KONOS*'s characteristic hands-on activities, such as setting up Passover for your family, creating a pharaoh costume for Egyptian night, or sculpting a Greek amphora out of clay.

In *Year One*, ancient history coverage is comprehensive from the time of Abraham's departure from Ur up to pre-Rome (the Celts and Etruscans), and history is the organizing theme throughout the year. English activities stress literature, vocabulary, and writing, with detailed lessons on various forms of writing incorporated into the different sections. Art is an

ideal combination of art history, appreciation, and expression. Bible coverage is extensive, particularly in the historical study of the Hebrews. Study for these subjects will be time consuming, so the authors recommend that students tackle only a few additional subjects, such as math and science. *Year Two* adds an introductory Latin course equivalent to about a half unit of credit. Although the format of the curriculum is not traditional, the level of learning is quite challenging. This is definitely a high school curriculum, and it might even be too challenging for some ninth graders. Parents should assist students as they make decisions about resources and assignments. Each student must have his or her own book since students do record keeping on lesson pages.

While students can do much of the study on their own, discussion is a vital part of the program. Parents should read the primary books that students are reading, then plan two to four hours per week for some great discussions.

Eventually, there will be volumes covering all of world history, but thus far we have the first two. *Year One: The Ancient World* covers Mesopotamia, the Egyptians, the Indus Valley, the Hebrews and their neighbors, the Greeks, and the foundations of Rome. *Year Two: The Medieval World* covers Rome, the Byzantines, Moslems, Vikings, Charlemagne, the early Church, Medieval times, and China to the present day.

It, too, is quite challenging, especially as it requires students to analyze philosophies and ideas in light of both history and current events. For example, students are asked to complete activities such as comparing the merits of multinational armies such as the one that existed in Rome prior to its fall to the present-day United Nations armies. Early church history, church fathers, and development of doctrine also receive far more attention in this volume than in other programs. The reading list for *Year Two* includes Shakespeare's *Julius Caesar*, Augustine's *City of God*, Dante's *Inferno*, Chaucer's *Canterbury Tales, Black Arrow, Beowulf, Quo Vadis?*, and *The Good Earth.*

Parent Helps

Tapes and workshops on implementing unit study methods are available from KONOS. Their tapes (both audio and video) are loaded with practical information and examples based on the experiences of the homeschooling authors.

I recommend the book *KONOS Compass: An Orientation to Using KONOS* ($25.00) to anyone using *KONOS.* It gives an overview of all three volumes along with a comparison to typical state requirements so you can see if you are covering the necessary material. *KONOS Compass* also provides teaching information and sample lesson plans.

Another alternative is *KONOS: Creating the Balance* ($150.00), a seven-hour video set covering critical topics, such as the father's role, multilevel teaching, planning and scheduling, dealing with toddlers, discipline, and how to choose library books. In addition, it features two hours of Jessica Hulcy teaching her children hands-on.

Tapestry of Grace
by Marcia Somerville
Lampstand Press
P.O. Box 5798
Rockville, MD 20855

(800) 705-7487
www.TapestryOfGrace.com
$130.00 per year-plan, also available as five individual units/packages per year-plan for $30.00 per unit

Tapestry of Grace (TOG) is a unit study curriculum that covers most of the major subject areas for students in grades K through 12. Some features that make it especially appealing are Christian worldview studies incorporated throughout the curriculum, a chronological approach to history as the basic organizing theme, and a classical education approach based on the grammar, dialectic, and rhetoric stages of learning.

Subject areas covered include history; English (writing and literature); fine arts; some science; geography; church history, including missions (more extensively covered than I recall seeing in most other curricula); Bible; and history of fine arts and sciences (reflecting a classical approach). You will need to use other resources for phonics, English grammar, math, foreign languages, and high school lab sciences.

While the *TOG* volumes include actual *World Book Encyclopedia* information on many topics as background information for you as the teacher, for the most part students will read information from recommended books that you purchase or borrow for them. Some books you will use frequently and should purchase (e.g., a basic history textbook and a *Write Source* grammar handbook from Great Source). Some will be used over a long enough period of time that they also should be purchased (e.g., *Tales from Shakespeare* by the Lambs). Others will be used for only a week or two and might be borrowed. While some titles are strongly recommended, in most cases there are a number of choices listed, which helps families who need flexibility due to limited resources. If you don't have a big budget, living close to a library will be a real asset if you use *TOG.*

The lengthy resource lists in each level (referred to as "Year-Plans") of *TOG* list all recommended books by category, with informative annotations for most that will help you decide which will be most useful for your children.

Like many other unit studies, while *TOG* uses many books, it also includes multisensory learning options to address different learning styles and interests. These range from reading, writing, and simple art projects through costumed reenactments.

TOG covers the same general topics for all students simultaneously, but instruction and activities are divided into four levels of learning reflecting the classical Trivium (with the Grammar stage divided into two sections). The divisions are: Lower Grammar (K–3), Upper Grammar (3–5 with a purposeful overlap here to address the reality that young students the same ages are rarely progressing at the same rate), Dialectic (6–9), and Rhetoric (10+). If you are unfamiliar with these terms, you should read up on classical education in books such as *Designing Your Own Classical Curriculum* or *The Well-Trained Mind* or search for one of the many Internet sites on the subject.

The author describes numerous options for starting at different times and for families with children of different ages. Permission is given for reproduction of pages for your immediate

family. Co-ops can reproduce pages if every family has purchased that Year-Plan of *TOG.* Classroom licenses are available for larger organizations.

There are four Year-Plans to *TOG*, and the idea is that you will progress through each Year-Plan at one level of difficulty (lower grammar, upper grammar, etc.), then go through each again four years later, shifting children up to the next level. You can see that the youngest children might go through each Year-Plan three times. A possible alternative is to take two years to cover a Year-Plan of *TOG* if you are starting with younger children. (The flexibility of this program is one of its major assets!)

Year One: The History of Redemption covers creation through the fall of Rome. *Year Two* includes Medieval World through the signing of the U.S. Constitution. *Year Three: The 1800s* addresses both American and European history. *Year Four: The Twentieth Century* covers world history, although U.S. history is a major component.

Each Year-Plan of *TOG* actually consists of four units plus a base component of materials that span the entire Year-Plan—materials such as introductory notes, the writing component, and resource list. This structure allows you to start in *TOG* at lower cost by purchasing a base plus one unit to begin for only $60.00. It also allows you to select areas of history to cover. For example, if you have already studied ancient civilizations up to but not including Ancient Rome using another curriculum, you can begin with only the units you need rather than the entire Year-Plan.

While the first impression is a bit overwhelming, once you've gotten familiar with the layout, it should be fairly easy to use. It's logically organized for each week. Using tabbed separator pages for each week—available for $12.50/set from Lampstand Press—will make it easier to locate things. The parent/teacher should familiarize himself or herself with the background material and discussion threads for each week. Overview charts actually work as general lesson plans. I think I would be likely to copy a set of these for each child to have in his or her assignment binder. The overview charts are followed by student pages for each level that should be photocopied for each student. These pages include questions, activity instructions, charts to be completed, etc. Watch for a CD-ROM that will soon be available with overview charts in PDF format. This will allow you to print as many copies as you need from your computer.

In the base component are about 150 pages divided into Writing Scope & Sequence and Writing Assignment pages. Parents/teachers draw from the first part to determine what writing instruction and activities are appropriate for each student. Much instructional material is actually included here, although you will need additional resources such as *Easy Grammar* or *Write Source* books. The second section pages include writing assignment charts for each of twelve levels (think grades 1–12) for each of the four "years" of *TOG* plus worksheets and evaluation forms. All of this makes the task much easier for the parent/teacher who is unsure about how to teach writing skills.

Like most extensive unit study programs, *TOG* requires a significant amount of parent/teacher preparation and presentation. Parents/teachers should dedicate a large block of time over the summer to plan and prepare for each school year. Keep in mind that most parents and teachers will be getting a great deal of education of their own as they work through *TOG!*

Overall, I think *TOG*'s use of classical education methods combined with the chronological approach helps overcome one of the weaknesses of some unit studies—that children read good

books and participate in fun activities but sometimes fail to make connections between topics studied and their chronological relationships. In addition, the worldview threads provide themes for discussions (ideally, directed by parents using Socratic methods) and activities that help children make important connections and understand the significance of what they are learning. *TOG* comes from a Reformed Protestant viewpoint, but it respectfully tries to include Orthodox and Catholic views as it explores church history. Consequently, *TOG* should be easier for those of the latter religious persuasions to adapt than many other unit studies might be.

Each Year-Plan purchased (or separate units thereof) includes three-whole-punched pages plus cover and spine for a binder, but the binder and tabs are not included.

The thirty-six Weekly Topics covered by each Year-Plan and the resources used are listed (and sometimes shown) on the *TOG* Web site along with other information about the curriculum. The site also hosts a bulletin board (called the Forum) where *TOG* users can get support from experienced users as well as from the author herself. In addition, the site links to complementary Web sites for various topics covered in *TOG.*

A World of Adventure: A Unit Study Based on World History
by Dorian Holt
Learning Adventures
1146 Kensington Court
Seymour, IN 47274
(812) 523-0999
e-mail: Dorian@Learning-Adventures.org
www.Learning-Adventures.org
AWOA—$75.00, *AWOA* game—$34.00, *AWOA* student pages—$20.00; *ANWOA*—$90.00, *ANWOA* student pages—$26.00

Two volumes are available thus far in a planned five-volume unit study program. Each volume is a full-year program (180 school days) covering Bible, history/social studies, science, language arts, and fine arts for students in grades 4 through 8. Math, P.E., cursive writing, and/or keyboarding will need to be covered separately. Science, social studies, and language arts occupy the bulk of study time.

The unique feature of this series is that read-aloud and background material is built into each volume so parents need to spend less time finding information books and selecting which information to present to their children. While you still need to use some additional books, studies do not depend upon those books to the extent all the others do.

Each volume comes as packets of prepunched pages. Binders are not included. You will want to purchase at least two to three large binders to hold each volume.

Daily lesson plans provide for a mixture of read-aloud/together time and independent work, including discussion and a significant amount of writing. Lesson plans provide complete literature, grammar, vocabulary, and spelling lessons, although parents will need to copy some of the material (e.g., sentences to be marked for grammar, spelling lists) onto a whiteboard or some other media to present it to students if you do not purchase the student page packets.

Please note that the spelling and vocabulary lists might be a bit challenging for some fourth graders, so use your judgment as to what to require from your own children.

Science lessons explain various topics in language that can be read directly from this book. Then you direct students to do independent reading on topics. Once in a while in the first volume there are science activities or experiments, but there are lots more in volume two.

Fine art lessons, likewise, provide material to be read aloud, sometimes followed by activities or reading. The second volume recommends resource books that you should use for visual examples of art, sculpture, and architecture. In the first volume, coverage of fine arts relates more to history than actual art activity, although the author recommends Barry Stebbings's art courses (see review of *Feed My Sheep* in chapter 14) to round out art experience. The second volume suggests many more art activities. In music, hymns are the primary focus in the first volume, while the second volume branches out further into classical, patriotic, and colonial music.

Aside from the extra books, there are many other required items—everything needed for each day's lesson is listed at the beginning of each subsection. These items are not that difficult or expensive to obtain (e.g., eggshells, CD or tape of Handel's *Messiah*, cooking ingredients). However, planning ahead is essential. You can plan unit by unit, but I think accumulating many items as you prepare during the summer, then leaving only library books and perishable items to worry about as you approach each section will save you grief.

Most unit studies are weak on accountability—how do you know students are really learning anything? To solve this problem, *A World of Adventure* has included questions for students similar to those you typically find in textbooks. These are found within each volume along with answers, but the questions are also available in separate student page packets in an easy-to-use worksheet format. As with the main volumes, pages are pre-punched for insertion in binders. There are 176 pages for the first volume and 395 for the second. These student pages seem essential to me, since questions in the main volume are really set up more as an answer key.

Learning Adventures has come up with a great review and reinforcement tool. Each volume will have a companion game. The game set for the first volume is called *Worlds of Adventure.* The game set has six laminated game boards, each covering a major area (e.g., Ancient Egypt) studied in that volume. There are six corresponding comb-bound question booklets with a total of 3,300 multiple-choice questions. Questions are in order according to the units, so you can use any game board selecting only questions from units covered thus far. You can even combine game boards and questions from all the different units to have a marathon game. This type of review can be more effective and certainly more fun than quizzes or tests.

The perspective throughout the study, particularly evident in history and science lessons, is Christian (Protestant) and also supports a young-earth viewpoint.

The first volume, titled *A World of Adventure (AWOA)*, is a 790-page book covering ancient Egypt through the Age of Exploration, dividing content into six subsections that also include study of ancient Greece, ancient Rome, the Middle Ages, and the Renaissance and Reformation.

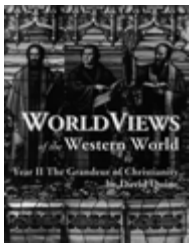
Required resources are a Bible, a hymnal, a dictionary, *The Golden Goblet, Aesop's Fables, Classic Myths to Read Aloud, The Bronze Bow, Adam of the Road, The Door in the Wall, The Swiss Family Robinson*, and two biographies from a suggested list. Many additional books are recommended within each section, but extensive lists offer many choices. You can borrow these from the library or purchase them. Those available through homeschool catalog companies are listed separately. In addition, you will need student notebooks and/or folders for each subject, note cards and file boxes for the cards, a world map or atlas, a globe, and potting soil and herb seeds to grow chives, dill, parsley, mint, basil, oregano, and thyme.

The herbs highlight an unusual feature of this unit study. Students grow the herbs, which then come under study in the Middle Ages section. They also use them in a variety of recipes reflective of different geographical and chronological eras.

The second volume, *A New World of Adventure (ANWOA)*, covers the years 1600–1800. At 1,613 pages, it is about twice as big as the first volume! It contains even more background and commentary as well more guidance for teaching writing and for covering science and fine arts. Other expanded areas are review and the practice exercises and activities—there are even more choices for children of different ages and abilities.

I would judge *A World of Adventure* a valuable entry into the unit study market, especially for parents who appreciate having much of the work done for them, but there is one major omission—an index. An index would allow parents to easily locate topics for review or reference or perhaps even to present them out of order.

The other three books in the *Learning Adventures* series will cover the following periods: Book 3, *Westward and Onward*—1800–1860; Book 4, *A Nation Torn and Mended*—1860–1900; and Book 5, *Adventures in a Modern World*—the twentieth century. American history will be the primary focus, although "other countries, personalities, and events will also be covered as they apply to events in America." This unique approach actually covers world history, but in connection to U.S. history. For example, study of the Gold Rush includes study of the Chinese people who came to America, which then leads to a side study of China itself. This is an unusual way to tackle world history, so it will be interesting to see how it plays out in future volumes.



World Views of the Western World
by David Quine
Cornerstone Curriculum Project
2006 Flat Creek
Richardson, TX 75080
(972) 235-5149
www.cornerstonecurriculum.com
Starting Points—$45.00; *Starting Points* package—$125.00; Syllabus for each of years I–III—$125.00 per volume for first student, $75.00 for each additional student in the same family, packages for years I-III range from $520.00–$675.00

This is a four-volume worldview unit-study curriculum that draws heavily upon the works and ideas of Dr. Francis Schaeffer. Each volume is published in an easy-to-handle, lay-flat-binding book. Each of these books serves as a course research-teaching syllabus for students. It is designed so that students can work independently, although this would not preclude group

discussion and interaction. In fact, the courses best lend themselves to a combination of independent and group work.

Following through the weekly lesson plans, students read from the research-teaching syllabus and answer questions and write essays directly in it. They are also directed to view videos, listen to audiocassettes, and read extensively from other sources. For each volume, you will need to purchase or borrow a number of other resources, most of which you will probably consider to be valuable additions to your library rather than resources to be used only for school. The list of resources seems daunting for a student to get through for all but *Starting Points*, but students will only use excerpts from a number of them.

This curriculum particularly suits the dialectic (logic) and rhetoric stages of classical education. Although it uses a mixture of Great Books and good books, it draws out of these books the important life questions. While Socratic dialogue is missing, Quine poses questions to students that direct them through the type of thinking that occurs in a Socratic discussion. In addition, students are challenged to logically defend their positions and conclusions in writing. Parents could also create a Socratic discussion themselves using the syllabus, although they would have to be familiar with the material to do so. Even though students cover a huge amount of information, focus throughout is upon ideas and critical thinking rather than on memorization of information.

Starting Points: World View Primer can be used by junior high or high school students. This is an introductory course that most students should complete before tackling the other three volumes. However, it was developed after the original volumes, and it is possible for high school students to skip it and begin with volume I.

Starting Points lays a foundation for developing a biblical Christian worldview consistent with Schaeffer's Reformed Protestant perspective. Alongside this central theme is a subordinate theme advancing the concept of limited government.

The first part of the syllabus directs students through chapters of James Sire's *How to Read Slowly*, Paul Little's *Know What You Believe*, and David Quine's *Answers for Difficult Days.* This is a rather directive study that guides students into acceptance and support of the biblical worldview. It requires neither personal research nor a study of primary documents to evaluate all available options. Although it deals with contrary beliefs, it does so in a cursory fashion most of the time. This first section might be the most problematic for those with different interpretations of what constitutes a biblical Christian worldview.

The second section deals with literature and movies as they present worldviews that are either consistent with or contrary to a biblical Christian worldview. Students learn what to look for and how to analyze what they read or view as they work through *The Chronicles of Narnia* (three books), *Frankenstein, Dr. Jekyll and Mr. Hyde, It's a Wonderful Life*, and *The Wizard of Oz.*

The third part of the syllabus guides students through C. S. Lewis's *Mere Christianity* and Christian Overman's *Assumptions* as they move into cultural applications of worldview, both positive and negative. This section of *Starting Points* as well as the next both bring in philosophical background that helps students understand motivating ideas that shaped our country.

The final section uses Gary Amos's *Never Before in History* as the foundation for a study of the founding of the United States, drawing upon information and ideas raised earlier in the study.

High school students can derive one credit each in Bible, literature, and United States history with this course. They will be required to do a significant amount of writing, including lengthy essays. As with the other volumes, assistance is provided within the syllabus for developing each essay.

The next three volumes follow a chronological timeline. Volume I, *The Emergence of Christianity*, begins with an introduction to the course and covers the basics of defining worldviews. Thus, students could skip *Starting Points* and begin with this volume. From there it moves on to a comparison/contrast of a biblical Christian worldview and Greco-Roman worldviews roughly covering the time period 1200 B.C.–A.D. 1200. (Primary attention is given to Ancient Rome and Greece and the Middle Ages.) In-depth studies of the book of Job, *The Iliad*, and *City of God* are representative of David Quine's strategy of using significant pieces of literature as "springboards" for integrated study in each area. The second half of volume I shifts to the Middle Ages, examining changes in philosophical and theological ideas and their consequences through this era and beyond. Among other resources used with this volume are *The Aeneid* by Virgil, *Affliction* by Edith Schaeffer, *How Should We Then Live?* by Francis Schaeffer, *The Republic* by Plato, *The Universe Next Door* by James Sire, the *How Should We Then Live?* video series, Cornerstone's *Adventures in Art* and *Classical Composers and the Christian World View*, audiotapes by Francis Schaeffer, and audiotapes from the *Knowledge Products* series on figures such as Aristotle and Plato.

The second volume, *The Grandeur of Christianity*, covers 1200 to the 1800s, addressing the Renaissance, the Reformation, the Revolutionary Age, political theory, early American history, and the rise of modern science. A primary focus is comparison and contrasting of the Renaissance view of life with that of the Reformation. Volume II uses such resources as Calvin's *Institutes of the Christian Religion, Reformation Overview* videos, Sire's *The Universe Next Door*, Machiavelli's *The Prince, Knowledge Products'* audiotape about John Locke and his *Two Treatises, The Shorter Catechism*, Luther's *95 Theses*, Bastiat's *The Law, The Communist Manifesto, Hamlet, A Tale of Two Cities*, and *Animal Farm* along with extensive, in-depth study of *The Divine Comedy.* Development of Reformation theology is a major theme.

The third volume, *The Loss of Truth*, continues from the 1800s (the Age of Reason and the Age of Fragmentation) to the present, covering both world and American history with a "Western civilization" emphasis. Volume III compares and contrasts the theistic ideas of the Bible with the naturalistic ideas of the twentieth century. Examples of resources used with volume III are dramatized audiocassettes on famous philosophers such as Hegel, Nietzsche, Marx, and Sartre; Hazlitt's *Economics in One Lesson* (audiotape); Johnson's *Darwin on Trial*; *The Plague* by Camus; *The New Evidence that Demands a Verdict*; *Walden Two* by Skinner; C. S. Lewis's *That Hideous Strength*; three of the *Star Wars* movies as well as the movies *Gettysburg* and *Gone with the Wind*; Schaeffer's *How Should We Then Live?* book and video series; and the *Of Pandas and People* science text. Quine's continual use of comparison and contrast effectively helps students to understand both the underlying beliefs and the cultural outworking of different worldviews.

Rather than aiming for comprehensive coverage of history, these volumes instead focus upon key ideas that dominated each period. Following the lead of Francis Schaeffer in *How Should We Then Live?* (both the book and the video series), study centers primarily around the areas of philosophy/religion, literature, music, and the fine arts. It also ventures beyond Schaeffer into economics, law and government, and science. Extensive writing is required throughout all volumes, and basic paragraph and essay writing skills are taught for the lengthier assignments.

A chart at the beginning of volume I shows how many credits might be given for each subject area for the high school transcript; the entire three volumes are equivalent to 16 Carnegie units, so this is a major part of a student's high school course work. It includes enough units for requirements in English, history, government, and fine arts, with the equivalent of 2 units of philosophy/theology, 1 unit of science history, and surplus units in government, political theory, and economics (the latter of which look great on a transcript). You will need to add math, lab science, and foreign language classes—plus health, physical education, driver's ed, and other such extras—to complete high school requirements.

While students can work through these volumes independently, there are no built-in mechanisms for accountability—no tests or quizzes. However, there are numerous essay questions and writing assignments. Parents should be looking over this work and discussing the course content with students. However, most parents are not familiar with the course content, which makes this rather difficult.

Ideally, parents should also participate in the study, at least reading through the material, watching videos, and listening to the tapes. If this is not possible, having a student narrate lesson content to the parent, summarizing what they have learned, might be adequate although less than ideal. Consider having a few students who are working through the study (simultaneously but independently) meet with a knowledgeable adult periodically to discuss course content.

If none of these ideas are practical, all is not lost. We might leave accountability at the student's doorstep: they get out of it what they put into it. When you consider how little students retain of what they “learn” under the most stringent accountability systems, there is something to be said for allowing them to absorb as much as they can without outside coercion. After all, this is most often how adults function when they want to learn something. The key here is student motivation. I have found in teaching worldviews that once most students grasp the idea of worldviews and how important it is, learning follows naturally. They easily understand that this is learning that matters!

Note that each volume is a consumable course and is intended for use by only one student. No photocopying or resale is allowed. Thus, you need to purchase a separate book for each student, although additional books are purchased at discounted prices. Packages include the tapes, videos, and books needed for each level. However, you can also purchase selected items from any of the packages if you already have access to some of them.

Some Other Unit Studies to Consider

The ABC's of Christian Culture by Julia Fogassy (Our Father's House, 206-725-0461, www.ourfathers house.biz)—chronological Catholic unit study. Great content but requires quite a bit from the parent/ teacher.

Ancient History: Adam to Messiah by Robin Sampson (Heart of Wisdom Publishing, 800-266-5564, http://heartofwisdom.com)—biblically-based chronological study.

Amanda Bennett's Unit Studies series by Amanda Bennett (AABennett Books, 423-554-3381, www.unitstudy.com)—innovative, inexpensive, topical unit studies on interactive CD-ROMs. Titles available: *Patriotic Holidays, Pioneers, Gardens, Baseball, Thanksgiving, Sailing Ships, Lighthouses, American Government, Easter, American Hero Stories*, plus *A Unit Study Journal* and *Unit Studies 101* on how to create your own unit studies.

Blessed Is the Man and *Far above Rubies* (All-Around Education, 334-273-7888, www.far andblessed.com)—two different volumes respectively focus on raising young men to be godly fathers and heads-of-the-household and young women to be godly wives and mothers; junior high-high school level.

Christian Cottage Unit Studies (Fountain of Truth Publishing Division, 303-688-6626, www.christiancottage.com)—combines traditional texts and real books for chronological unit studies.

Diana Waring's Unit Studies (Diana Waring-History Alive!, 605-642-7583, www.dianawaring.com) —combines Diana's tapes and supplemental books for units that primarily cover religion (Protestant) and social studies with some work in other subjects.

Learn and Do Unit Studies by Kym Wright (Alwright! Publishing, P.O. Box 81124-W, Conyers, GA 30013, www.alwrightpub.com)—inexpensive unit studies on topics such as color, arachnids, botany, photography, turtles, and the library.

Lessons from History by Gail Schultz (Hillside Academy, 1804 Melody Lane, Dept. W, Burnsville, MN 55337, www.LessonsFromHistory.com)—inexpensive chronological unit studies that serve more as frameworks and outlines than comprehensive programs. See comments in chapter 10.

Life in America series by Ellen Gardner (Life in America, 877-543-3263, www.lifeinamerica.com)— chronological unit studies centered around U.S. history.

My Father's World from A to Z by Marie Hazell (My Father's World, 573-426-4600, www.mfwbooks.com)—comprehensive unit study programs for kindergarten and first grade that even include reading instruction.

Night Owl Creations Unit Studies (Night Owl Creations, Inc., 352-242-9842, www.geocities.com/ nightowlcreationsinc)—topical unit studies that primarily serve as supplements.

Patchwork Primers (Patchwork Primers, 850-951-0399, www.patchworkprimers.com)–chronological unit studies for those who like to do some of their own research.

Polished Cornerstones and *Plants Grown Up* (Doorposts, 888-433-4749, www.doorposts.net)—focuses on practical life training and developing godly character for elementary through high school levels.

Prairie Primer by Margie Gray (Cadron Creek Christian Curriculum, 505-534-1496, www.cadron creek.com)—units are built around the nine books in the *Little House on the Prairie* series.

Interdisciplinary Units (Teacher Created Materials, 800-662-4321, www.teachercreated.com)—these limited, topical unit studies are nonsectarian and should be

used as supplements.

TRISMS (Trisms, 918-585-2778, www.trisms.com)—chronological unit studies for junior and senior high.

The Weaver (Alpha Omega, 800-622-3070, www.home-schooling.com)—comprehensive unit study following a scriptural timeline and centered around books of the Bible.

Where the Brook and River Meet (Cadron Creek Christian Curriculum, 505-534-1496, www.cadron creek.com)—literature-based study based on the Victorian era.

Zephyr Unit Studies (Zephyr Press, 800-232-2187, www.zephyrpress.com)—nonsectarian, topical unit studies. These are not as comprehensive as most of the others listed but might make good supplements.

13

Foreign Language

This is an especially tough area to come up with Top Picks since I do not have room to pick a best product for every language, much less differentiate products for younger students and older students in each language. So I've picked two top publishers that produce language resources for many different languages that also address the needs of both older and younger learners.

Then I made an exception and got specific for the Latin language since it is increasingly popular for study among homeschoolers and is not covered by the other two publishers.

The Learnables—French, German, Spanish, Russian, Chinese, Japanese, Hebrew, Czech, or English
International Linguistics Corporation
12220 Blue Ridge Boulevard, Suite G
Kansas City, MO 64030-1175
(800) 237-1830
www.learnables.com

(for most languages) Level 1 book with tapes or CDs—$49.00–$53.00; Basic Structures 1 — $45.00–$65.00; Level 1 and Basic Structures 1 package for Spanish, French or German—$89.00; Level 2 package for Spanish, French, or German (includes Learnables 2, Basic Structures 2, and Grammar Enhancement 1)—$169.00

Check Web site or brochure for more pricing details

The Learnables approach to foreign language works well for homeschooling families for at least four reasons.

1. Flexibility for different age learners. Using the different components, *Learnables* can be used to instruct children from elementary grades through high school (and even adults!).
2. Does not require the parent to know or teach the language
3. Multisensory format works for many different learning styles
4. Inductive, experiential methodology is a more natural learning method than traditional approaches to foreign language acquisition

The Learnables features an unusual approach that uses picture books (no text with the pictures in the basic book for each level) and cassettes or CDs to build up vocabulary and teach sentence structure from repeated usage. The methodology is to develop understanding and comprehension first, then follow with reading, speaking, and writing skills, in that order. This

is similar to the way most of us learned English, although a child learns to speak before reading.

The same picture books are used with each language. All ages should start with Level 1, which includes a book with five audiocassette tapes or four CDs. Tapes or CDs begin with words and short phrases whose meaning is obvious from the pictures. Translation is not given. If the student is in doubt, repetition of a word in another picture will likely clear things up. Sentences become more complex as do the pictures. Pronunciation is very clear. There are similar sets of books with tapes/CDs for four levels in Spanish, French, German, Russian, and Chinese. Fewer levels are available for Hebrew, Czech, and Japanese.

This approach is certainly more enjoyable than typical programs of either the textbook variety or the tapes that have us simply repeat the foreign language phrases after the speaker. The learner must think about what is happening in the pictures to understand the meaning. This methodology also adds visual memory association to the words students hear, enhancing vocabulary retention.

Children in the early elementary grades can work through the picture books and tapes/CDs. However, older students need to learn to read and write the language and to understand its grammatical development, especially if they are seeking credit for high-school-level courses. The *Basic Structures* and *Grammar Enhancement* programs add these elements.

Basic Structures programs are designed as companions for each level. Thus far, the *Basic Structures* program is available for four levels of Spanish, three levels of French and German, and one level of Russian and Hebrew. (International Linguistics is in the process of converting from cassette tapes to CDs, so you will need to check the availability of the different media.) The number of tapes or CDs varies depending upon the language.

Basic Structures 1 for Spanish, French, and German each include a book and three CDs. *Basic Structures* books include pictures with phrases or sentences plus a very few reading/writing activities without pictures. The primary goal with the *Basic Structures* program is learning to read the language rather than learning to write it. Vocabulary in each *Basic Structure* program is very similar to that of the corresponding picture-book program. Children listen to the CDs, read the phrases and sentences, and sometimes do matching, fill-in-the-blank, or similar written exercises. These could be done on separate paper so you can reuse the same book with more than one child. However, additional books are available without CDs if you need them. *Basic Structures* might be used with students from about fourth grade and up. Junior high and high school students definitely should use *Basic Structures* after completing each level of the *Learnables* picture books.

Grammar is not taught directly within either the picture books or *Basic Structures* programs, but students *do* acquire practical grammatical knowledge from actually using the language. At elementary levels this does not present a problem as it does for high school where students are expected to study the grammar of whatever foreign language they are learning. This is where *Grammar Enhancement*s come in.

Grammar Enhancement programs are available for Spanish, French, and German. Each *Grammar Enhancement* set includes a book and either five audiocassettes or four CDs ($63.00 each). These are designed to be used after completion of level 1 of a language, both the picture-book program and *Basic Structures*. Thus, you could have young children working through only the picture book, intermediate children adding *Basic Structures*, and teens

continuing through *Grammar Enhancement.* Alternatively, you could have students complete both levels 1 and 2 before tackling *Grammar Enhancement.*

The publisher sells a package of *Grammar Enhancement* with level 2 materials, suggesting it be used at the beginning of level 2. However, if you are trying to create something comparable to a typical first-year high school language course, *Grammar Enhancement* is essential. It uses vocabulary from level 1 and adds a great deal more. For example, in the Spanish course, the preterit tense is introduced in *Grammar Enhancement* but not in the other level 1 books. Yet, the preterit tense is typically taught in a first-year course.

Grammatically, *Grammar Enhancement* focuses on prepositions, pronouns, plurals, and verbs. (Future *Grammar Enhancement* books will deal with even more topics, such as "to be" verbs, advanced prepositions, future tense, and the conditional.) The present book contains the words from the tapes/CDs as well as pictures, but no instruction is given in English and no grammar rules are provided. Instead, many examples are given so students learn the sometimes subtle distinctions as they look for patterns and listen to the correct usage. This method might be more effective for some students than traditional instruction about grammar rules.

None of the components require any significant amount of writing, and there is no built-in requirement that students actually speak the language. However, I think parents and teachers can easily work on these two skills depending upon the ages and abilities of students. For example, parents might have students read aloud the *Basic Structure* exercises after students have had time to first listen to them. Older students could be required to write their own captions for pictures in either *Basic Structures* or *Grammar Enhancement* (covering up the written material in the book), then compare what they have written to the book.

The program is set up with four levels for most languages. Each level follows a similar plan, although the other three levels have five to six cassette tapes each. Spanish students also have available to them a fifth level as well as specialized vocabulary books on eating, transportation, walking, and placement. German students can continue with levels 5, 6, 7, and 8, or they might work through any of eight specialized vocabulary study books.

It is impossible to correlate levels of this program directly with traditional language courses, although the combination of *Learnables 1, Basic Structures 1*, and *Grammar Enhancement* could be considered a first year course. The publisher claims that the four levels of Spanish are equivalent to four high school years, while four levels of German and French are equivalent to 3.5 high school years. High school students should aim to complete the four levels using all basic components available for each level. The specialized vocabulary books would be optional elements.

Christians might also want to use the supplemental *Bible Stories in Spanish, French*, or *German* (includes a book and CD) after completion of level 2.

The Rosetta Stone (CD-ROM computer programs)
Fairfield Language Technologies
135 West Market Street
Harrisonburg, VA 22801
(800) 788-0822
e-mail: info@RosettaStone.com

www.rosettastone.com
Level 1—$209.00, level 2—$235.00, set of both levels—$349.00 per language

Are you looking for a language program that will help your student understand the spoken words as well as the written ones? Do you want your child to learn a language that you do not know? These CD-ROMs are similar to *The Learnables* audiotapes and CDs in methodology but are more interactive and give students more options.

First you look at four photos or drawings and listen to words by native speakers that are illustrated by the pictures. Listen to the sequence over and over, or choose a particular photo and hear the words as many times as you wish. You also have the option of having the words appear on the screen if you are one of those who need to see a word in order to hear it correctly. After you go through the ten preview screens of the lesson, pick the style of exercise that is most helpful to you. Hear a word and click on the correct picture, or see a picture and choose the correct word. Especially for languages that look very different, such as Arabic or Chinese, it would be helpful to use the exercises that give you a chance to try matching the sound of the word to its printed form.

You can repeat a lesson as often as you like, test yourself, and keep a record of your progress. If you have a microphone with your computer, you can even evaluate your pronunciation.

The photos are multicultural to be appealing to all types of students, and some even include very short video segments to clarify what is happening (such as showing the difference between tying and untying shoes).

Homeschool editions include a Student Management System that allows parents to create individual lesson plans and track progress for an almost unlimited number of students.

The foreign languages that are available in two levels are: German, Dutch, Spanish (either Latin American or Castilian), Portuguese, Arabic, French, Italian, Russian, Japanese, Chinese, and English (both U.S. and U.K.). The first level is also available in Latin, Polish, Welsh, Arabic, Hebrew, Thai, Vietnamese, Korean, Indonesian, Turkish, Hindi, Danish, Swedish, Pashto, and Swahili.

Those who want writing practice can order workbooks for the German, Spanish, French, and English programs. Currently there are study guides for the first level of those languages, with notes on grammar and usage. I would consider these essential for most teens trying to complete a course for high school credit. A quiz book is also available for Spanish.

Programs are recommended for ages 8 and up. The programs run on Windows 95 or higher (requires a Pentium system and microphone for speech recognition) or Mac OS 8.6 or higher systems. Rosetta Stone has a free online demo, or you can request a demo CD at no charge.

Henle Latin courses
by Robert J. Henle, S. J.
Loyola Press
3441 North Ashland Avenue
Chicago, IL 60657
(800) 621-1008
e-mail: customerservice@loyolapress.com

www.loyolapress.com
$16.95 each, answer keys—$1.00 each, teacher's manual—$2.00

This four-year Latin course, originally published in the 1940s, has been reprinted without significant change. The course focuses on mastery of the forms and vocabulary. Classical readings (particularly from Caesar, Cicero, and Virgil) are incorporated throughout the course along with some Christian readings (including a few from Scripture) and some expressly Catholic. (*First Year* has a particularly strong Catholic flavor at the beginning of the book.) The classical approach of this book fits perfectly with other elements of a classical education.

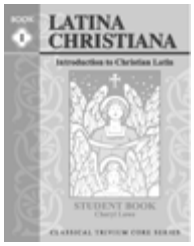
In the *First Year* book, grammar and vocabulary instruction take precedence as students work through numerous practice exercises. Some are labeled "essential" for students who master the material quickly and need not do all the exercises. The entire book may be covered, but if students complete up through lesson 26, it is sufficient for Latin I.

The *Second Year* book reviews the material, including explanation of material taught past lesson 26 in the first book for those students who might not have covered it. In the *Second, Third*, and *Fourth Year* books, the first half or more of each is readings to translate. In *Second Year*, notes and definitions are at the bottom of pages (footnote style), while *Third* and *Fourth Years* feature copious notes, background, and explanations on facing pages. Exercises are found in the second half of each of these three books, with accompanying instruction on new concepts. Reference helps and Latin-English and English-Latin vocabulary lists are at the back of each book.

Companion answer keys for each book are inexpensive photocopies. You will definitely want to purchase these. There is also a small, 105-page *Teacher's Manual for Henle Latin Series First and Second Years* by Sister Mary Jeanne, S.N.D., that explains the philosophy of the course and teaching strategies. It was written in 1955 for classroom situations, but there are many helpful ideas that will be useful in homeschooling situations.

There are other good Latin programs available, but none are this reasonably priced for such a solidly academic Latin course.

Loyola Press also publishes *Henle's Latin Grammar* ($9.50), which is extremely useful alongside this series.



***Latina Christiana,* 2000 editions**
by Cheryl Lowe
Memoria Press
4103 Bishop Lane
Louisville, KY 40218
(877) 862-1097
e-mail: magister@memoriapress.com
www.memoriapress.com
Books I and II: student books—$15.00 each, teacher's manuals—$20.00 each,
CDs—$4.95 each

Cheryl Lowe believes that Latin is the ideal foundation for a classical education for children in grades 3 through 8. Ideally, Latin study replaces some English language study (particularly grammar and vocabulary) through these years. It also serves as the focus for study of history and geography to a minor extent. Cheryl explains how to integrate your studies in

her teacher's manuals, correlating history questions based on *Famous Men of Rome* (from Greenleaf Press) throughout both volumes.

Parents with no Latin background should find these courses very easy to use. Lesson preparation is minimal unless you choose to develop some of the optional activity ideas Cheryl suggests. These are not independent study workbooks; you really need to use the teacher's manuals for lesson presentations.

She advocates using *Latina Christiana I* and *II* for grades 3 to 5, then using a first-year high school Latin text in grades 6 to 8 to complete the foundation. Students are then prepared for further language study and for reading Latin literature in high school. They should also find study of English and any of the Romance languages much easier.

Latina Christiana uses medieval or "church" Latin pronunciation rather than the "classical." You should find the companion CD very helpful for learning pronunciation. Words and phrases relating to Christianity are included; content should be appropriate for both Protestants and Catholics.

Lessons need to be taught following instructions in the teacher's manuals. The teacher's manuals are very nicely designed both in appearance and functionality. Smaller-sized copies of student pages are surrounded by lesson information. Answers are overprinted so you do not have to go to a separate answer key.

Lessons are learned through repetition, memorization, and drill, but Cheryl presents a number of ideas for making this interesting: vocabulary flash cards, games (e.g., Latin "Pictionary"), songs, and an audio CD.

The student books are less intimidating than most other foreign language workbooks since they were written for young students. Students do oral work with new vocabulary, study words and phrases, learn a well-known Latin proverb or phrase, and complete exercises in their books (or on blank paper if you wish to reuse the books). Students also listen to the CD that comes with each level and complete a tape exercise form that helps them review vocabulary, conjugations, and declensions. Most lessons include memorization of Latin prayers (e.g., the "Pater Noster" or "Our Father") or songs (e.g., "Adeste Fideles").

The courses were developed with small classes of homeschoolers, so Cheryl suggests gathering a small group for class. However, the courses should work well for a single student and parent.

Book I covers first and second declension noun and adjective forms, first and second conjugations and three tenses, subject/verb agreement, personal pronouns, gender, and use of the nominative case. Book II covers the third through fifth declensions, third and fourth conjugations, present and imperfect tenses, use of accusative and ablative cases, third person personal pronouns, and principal parts of selected verbs. Both levels include lists of English words derived from Latin vocabulary words in each lesson.

Helpful appendices include lists of all the vocabulary words and their meanings, charts of declensions and conjugations, and other helpful reference material.

Memoria Press also publishes *Prima Latina* ($32.95 for three items), an easier course that can be used prior to *Latina Christiana.* It covers some of the same vocabulary, but more slowly and in a different format. *Prima Latina* provides a "gentler" introduction to Latin, since *Latina Christiana* is likely to be quite challenging for most students in the elementary grades. While

Memoria Press says *Prima Latina* can be used by children in grades 1 through 4, they qualify this by saying that it is "for students who are still becoming familiar with English grammar but are competent readers." I would add that students need to be fairly competent writers since there is quite a bit of writing in the course.

The teacher's manual for *Prima Latina* has general teaching guidelines and reproducible vocabulary drill forms and tests. Other than that, it has only overprinted answers on pages identical to those in the student text rather than expanded lesson plans. The companion CD helps with pronunciation and includes beautiful Latin hymns from another Memoria Press product, *Lingua Angelica.*

Lingua Angelica is a supplemental study of Latin hymns. It consists of a single CD with twenty-four hymns, two levels of student books with teacher manuals, and a songbook ($39.95 for first level, CD, and song book). The same songbook and CD are used with both levels. While you can purchase the CD alone just for the beautiful music by a six-voice Gregorian chant choir, the workbooks do not function as a stand-alone course but must be used alongside a beginning Latin course.

Optional DVDs or VHS tapes with lesson presentations are available for both *Latina Christiana* and *Prima Latina.* The video presentations teach the content of the books, but you still need the course books for student exercises, practice, and review. Parents worried about their ability to teach Latin, as well as those short on time, should really appreciate this option. Check the Web site for price and availability information.

14

Electives, Online Classes, and All-in-One Programs

After sorting through all sorts of curriculum, checking out new items, and making my initial list of Top Picks, I discovered I already had close to one hundred items before even touching electives. I could not bring myself to totally eliminate any electives, since you might get the impression that they don't matter! On top of that, I had already decided that it was critical to include some of the online, all-in-one, and computer courses so you have an idea of the increasingly sophisticated and helpful options available.

So I "demoted" a few of my original Top Picks to join the rest of my reviews available at www.CathyDuffyReviews.com. This gave me just a little space to add a few elective items that are especially good while also keeping my reviews of the unusual programs that don't fit into any other category.

Obviously what I have included here is a miniscule sampling of what's out there. I haven't touched many topics at all. Music, physical education, keyboarding, handwriting, home economics, driver's education, economics, worldview, and many other topics are not represented here, and it's not because these subjects are not important or useful. There is a logic to my narrow selection of health, critical thinking, and art resources. I believe the resources I have chosen represent "electives" that are essential for *all* students. You need not use these particular resources, but I believe that health education, critical thinking, and basic drawing skills are essential for a good education. I could have included handwriting, music, home economics, and a few other subjects in that list, but I omitted them for reasons such as the following:

- Handwriting: There are many excellent handwriting courses available. The style of handwriting you choose is a matter of personal preference as far as I am concerned (and I am aware that there are some advocates of one style or another who believe theirs is the only right way to teach handwriting!).
- Music: Where to begin? It all depends upon what direction you want to go—music appreciation, keyboarding skills, string instruments, voice.
- Home Economics: There is no single Home Economics text or course that I would rate as a better choice than a real books and hands-on approach. However, some unit studies come close.

Thus, the following are reviews of items I think most homeschoolers need to include as electives.

Health

Total Health: Choices for a Winning Lifestyle and Total Health: Talking About Life's Changes
by Susan Boe
Purposeful Design Publications, a division of ACSI
P.O. Box 65130
Colorado Springs, CO 80962-5130
(800) 367-0798
www.acsi.org

Choices: $28.95 hardcover or $23.95 softcover, teacher's edition—$35.95, test and quiz book—$15.50, *Parent Connection*—$12.50; *Talking About*: $22.95 softcover or $26.95 hardcover, teacher's edition—$36.95, test and quiz book—$15.50

Up until recently, there was no comprehensive health textbook written specifically for Christian day schools *and* homeschoolers. Now we have two texts, *Talking About Life's Changes* for middle school and *Choices for a Winning Lifestyle* for high school. Both books are definitely written from a Christian perspective. Spiritual principles emphasizing our relationship with God play a major role throughout both books. In addition, both books are similarly divided into four large units on physical, mental, social, and spiritual health.

The Parent Connection is a book for parents only! It correlates with topics covered in both texts, supplying background information, discussion topics, problems to watch for (e.g., depression, eating disorders), and suggestions for dealing with touchy topics such as contraception and masturbation. Note that the topic of contraception is not addressed at all in the student books. *The Parent Connection* touches on different forms of contraception, how they work, and their relative effectiveness, but the issue of the morality of contraception, even within marriage, is not raised.

The *Choices* text is 464 pages. Although there is a teacher's edition, you shouldn't need it. (The teacher's edition features chapter outlines, suggested course plans, vocabulary exercises, worksheets, transparency masters, activity suggestions, and discussion questions.) The test and quiz master book for *Choices* includes fairly brief teaching instructions plus quizzes, tests, and answer keys.

Choices covers all of the topics addressed in other health texts, although the amount of time devoted to many of the topics is very different. For example, human reproduction is covered very briefly without full details or illustrations. Instead of spending pages and pages describing various types of drugs, it discusses drugs and drug abuse in a more general fashion in about eight pages. For many home educators, this approach makes far more sense since we spend more time on positive health and nutrition issues and less time on the negative issues that seem to require so much attention in public schools.

Also, while other texts address physical, mental, and social health, *Choices* adds a section on spiritual health. Social health deals with personal care, first aid, attitudes, responsibility, and relationships, including dating. Although very conservative in approach (encouragement to group date and avoid sexual activity of all kinds), the author treats dating as acceptable.

Treatment of topics such as health, fitness, and nutrition is generally mainstream—no discussion of homeopathy, herbology, alternative medicine, etc. While this course might not be

as radical in some of its positions as some home educators are, it does seem to be the most comprehensive, conservative alternative designed with home educators in mind.

The layout makes it very easy to use. Chapter reviews focus on both comprehension and application, providing natural opportunities to expand on topics of special interest.

Talking About is very similar in many ways to *Choices*, although at 336 pages, it is less comprehensive. There is also a greater emphasis on the changes young teens undergo than in *Choices.*

You don't need to use both texts, and I think *Choices* would be the better one to use if using only one. If you want to use *Talking About*, the middle school level, there is a more than seven-hundred page teacher's edition, student book, a test and quiz master book that includes its own answer key plus keys to chapter reviews, and a companion workbook and answer key.

Critical Thinking and Logic

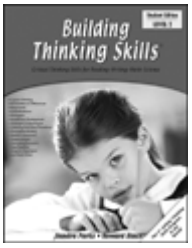
Logic beat out other electives for inclusion in this chapter because I am convinced that a grasp of logic (at a minimum, what is called "informal logic") is essential to a good education. If you can't think straight and then express your ideas logically, if you can't spot the shysters and the propaganda and sort through it all to the truth, then your education is incomplete.

In addition, many logic books on the market are fun to use. My eldest son says that one of the best books we used in all of our homeschooling years was a small paperback titled *How to Lie with Statistics* (W.W. Norton and Company). This little gem has been reprinted numerous times since it was written in the 1950s. It will have you in stitches with some of its examples. It's a terrific way to inoculate your older teens against marketers, politicians, and media manipulation. The reason it's not in my Top Picks list is because it really serves as a supplement to logic studies rather than a primary resource and because it does require "parental editing"—read it yourself first before using it with your older teens since there are sections you will probably want to skip.

Even with the logic/critical thinking resources I selected, I cheated a little by including Critical Thinking Company, a publisher with hundreds of items, most of which are supplementary. They are not the only publisher of critical thinking resources for younger children, but they have by far the broadest and best selection. Their line includes what I would call "prelogic" books for young children, books relating to different subject areas that appeal to children of different learning styles, books for teens that address informal and formal logic, and software programs. These are great for challenging your children to stretch their thinking skills as well as helping them learn to function in other thinking/learning modes.

The Fallacy Detective and *With Good Reason* are great resources for younger and older teens respectively to introduce them to informal logic—a required course for all students if it were up to me.

If you want to explore formal logic, a good place to start is *Traditional Logic: An Introduction to Formal Logic* by Martin Cothran (Memoria Press). For more about teaching logic and available resources, check out reviews at www.CathyDuffyReviews.com or investigate the articles, reviews, and helps at www.christianlogic.com, a site created by Nathaniel and Hans Bluedorn, authors of *The Fallacy Detective.*



The Critical Thinking Company
P.O. Box 1610
Seaside, CA 93955-1610
(800) 458-4849
www.criticalthinking.com

Building Thinking Skills student books: $22.99—$25.99 each, teacher's manuals—$18.99 each

The *Building Thinking Skills* series is probably the most basic, comprehensive resource for thinking skills at all levels. Each reproducible student book is accompanied by a teacher's manual that offers a combination of lesson plans and teaching information (except for the *Hands-On Primary* book, which requires no manual). Lessons use student worksheets and interaction between teacher and student(s). Each lesson should take about ten to twenty minutes to complete and requires just a few minutes of teacher preparation.

The first three books in the series are written for grades pre-K through 6. The first book, *Building Thinking Skills: Hands-On Primary*, is suggested for grades pre-K through 1. The required hands-on materials are attribute blocks, pattern blocks, and interlocking cubes. Manipulative activities are performed with these materials both prior to and while students complete the worksheets. In the 246-page *Primary* book, children deal with similarities and differences, sequences, classifications, and analogies. Visual-figural skills get a workout in these lessons too.

Level 1 (327 pages), suggested for grades 2 through 4, uses interlocking cubes for a few lessons and broadens activities beyond the primarily visual-figural approach of the *Primary* book. Children work on the same skills as in the *Primary* book but add discussion of five types of analogies, following directions, antonyms and synonyms, "deductive reasoning, parts of a whole, map skills and directionality, logical connectives, spelling and vocabulary building, Venn diagrams, pattern folding, rotation, tracking, mental manipulation of two-dimensional objects," and more.

Level 2 (367 pages), suggested for grades 4 through 7, does all of the above, expands to seven different types of analogies, and adds branching diagrams, overlapping classes, and more. The idea of "implications" is also introduced. Activities vary in difficulty, so select those that seem most appropriate for each child.

Mind Benders—$9.99 each

The *Mind Benders* series consists of sets of smaller, thirty-two- to forty-eight-page books. Each book is self-contained, with teaching suggestions and instructions in the front and detailed solutions in the back. Children organize clues (some direct and some indirect) in grids (except in the introductory *Warm Up* level) to derive logical conclusions. For example, in an introductory lesson, students are told, "Edmund, Ida, Joanne, and Tony are two sets of twins. Tony is a month younger than Edmund. Joanne is a month older than Ida." Students must then answer two questions, "Which pair is the younger set of twins?" and "Which pair is the older set of twins?" The *Warm-Up* book is for grades K through 2. For grades 3 through 6, there is a series of books, *A1, A2, A3*, and *A4.* Some older students will be ready to move up to the second series, *B1* through *B4*, suggested for grades 7 through 12. These activities appeal to children because it seems like detective work as students try to match clues with identities.