Science and Math Curriculum
For
Classical Education

The classical education curriculum used by Christian classical schools around the nation form an excellent basis for a vigorous but effective education, Christian or secular. The trivium with the three stages of grammar, logic, and rhetoric uses the natural child development and has proved efficient for millennia. The modern use of true phonetics and Shurley Grammar along with the Latin language base can effectively place nearly all the students in the 99 percentile in standardized tests like the Iowa Achievement by the seventh and eighth grade. This classical curriculum has been used very successfully for years by Cair Paravel Latin School in Topeka and Veritas Christian School in Lawrence.

The weakness of the modern classical curriculum, based on Dorothy Sayers and Doug Wilson works, is in the math and science. For the most part, the schools use A Beka, Bob Jones, or Saxon books for math and science. Like most Christian curriculums, these subjects are largely sanitized versions of the secular school systems. There is little difference from the public schools in math and the hard sciences such as chemistry and math. In fact, up until the present there has not been a good alternative. The books for these subjects are rather expensive and it is difficult for parents to home school these subjects and for schools to find good teachers in these subjects. The public schools in Kansas will lose about one-half of all their teachers in the next five years.

There is need by a rather large market, not only from the Christian sector, for a curriculum to speed up and facilitate the teaching of math and science, particularly in the junior and senior high levels. There are a number of unpublished techniques to greatly facilitate the learning of math (even calculus), chemistry, and physics, as well as lower level science. It is the hope to explore the feasibility of developing curriculums, books and media aids to put these subjects into the hands of home schooling parents, teachers, and schools.

These advanced and facilitated math and science curriculums could be used here and overseas, hopefully at reduced costs. In the case of audio-videos, some of the best teachers in the world could do the prime teaching with the parent or teacher becoming the facilitator to cover homework, exams, and labs. This is commonly done in higher education effectively with a world-class lecturer and tutorials lead by less advanced assistants.

These new math and science curriculums will be built largely off the law of conservation of quantities. Nothing is lost or gained in any math, chemistry, or physics interaction or calculation. It is in reality the law of Creation. Since the Creation, there has never been an increase of matter and energy. Math is just a virtual of the real world. That is why all of science and engineering relies on

mathematics. The whole physical realm with its laws of science is just keeping track of quantities. Equations are simply equating equal quantities. The physical world is defined by physics, the basic interaction between matter and energy, the only constituents of nature. For instance, biology is just a subdivision of chemistry. There is inorganic chemistry, as well as biochemistry which not related to biology. In turn, chemistry is a subdivision of physics. Chemistry only involves the exchange of electrons in the outer orbits with no nuclear changes. Physics, however, is all encompassing since it includes all matter and energy interactions, the totality of science. Therefore, math and science are simply the arts of conservation of quantities.

The development of these new curriculums will rely heavily on this simple concept of conservation of quantities in math, chemistry, and physics. Using this simple concept the learning process of math and science will not only be easier but it will be quicker.

Math

Power math has been around for decades. Stunning achievements can be made with ghetto kids where, after a minimum amount of training, they can be given a large number and then can determine its square or cube root. They can add up in their head a column of ten numbers of five digits each. Other systems can easily teach junior high school kids integral calculus.

Math is largely addition and subtraction. Multiplication is just shorter way to add. Logarithms are a more sophisticated way of addition and subtraction. Integral calculus is a yet a more sophisticated form of addition. Our powerful computers work only on binary, the addition and subtraction of two numbers. The computers can not even work to the base 10. The logic and complexity of high octane computers is done only in counting by twos. They just do their simple work at high speed.

Since learning math is cumulative, it will be fundamental that the curriculum begins on the conservation of quantity concept. The parallel teaching of the conservation of quantity in science can reinforce the mathematics curriculum.

Chemistry

The teaching of chemistry will largely be based on the periodic table of elements. Often it is posted in the front or back cover of science books, especially chemistry books. However, it is seldom used as the basic avenue for teaching chemistry. The simplicity of teaching chemistry will come from this periodic table of elements from which all the matter in the Universe is composed. Balancing equations, predicting reactions, determining valences and molar weights, understanding reactivities, and ionic potentials can all be understand

from this chart of the elements. The conservation of quantities of matter and energy is fundamental to chemistry.

Physics

Modern physics assumes that the entire physical Universe has only these two components: matter and energy. In the last two hundred years, physics has developed two general laws which encompass all matter and energy interactions. These two laws of physics are: (1) the conservation of mass and energy and (2) increasing entropy. All of our laws of science (physics, chemistry, and biology) are derived from these two laws. The first law is the quantity law for matter and energy. It states that in all interactions the total quantity of matter and energy is conserved. In every matter-energy interaction there is the same quantity of matter and energy before and after the interaction. Matter-energy interactions are a zero sum game; there is no net gain or loss of matter and energy in any interaction. The ideal laws of classical physics, such as conservation of energy (kinetic and potential), conservation of matter and charge, conservation of momentum, conservation of angular momentum, ideal gas laws, field theories (electric, magnetic, and gravity), etc., are all conservation laws, derived from this first law. This law has been verified without exception for nearly 150 years and is the most universally accepted law in both classical and modern physics. The Universe never creates or destroys matter and energy. The first law is a consequence of the Creation. The second law is a consequence of the fall of Man.

The second law is the quality law for matter and energy. It states that in all matter-energy interactions, entropy or disorder always increases. Although the quantity of matter and energy is always constant in any interaction according to the first law, the disorder of matter and energy always increases in the same interaction according to the second law. Again, the veracity of the second law is bedrock for both classical and modern science. The non-ideal laws all involve increasing entropy or disorder like friction, free expansion of gases, and free heat exchanges are derived from this second law.

Although this second law has been verified also for nearly 150 years, it is a statistical, mathematical law which for all practical purposes needs no experimental verification. Since the disorder states of any system of matter and energy are so much more numerous than ordered states above absolute zero degrees temperature, then any matter-energy interaction will result in a more disordered state at a given temperature. Entropy makes events irreversible and was given the name, time's arrow, by the physicist Eddington.

Using these two laws, the teaching of physics can be considerably facilitated, even in the more complex aspects. This understanding of physics will enable an average student to acquire a first class knowledge of physics.