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Welcome to our fifty-second edition of "The Academic Journal," a bimonthly bulletin in which you can read about MCA's educational philosophy, instructional methodology, and the various viewpoints and positions of our faculty, staff, students, and families.

What Guides Science at MCA?

Almost daily, news headlines explode with a latest and greatest scientific discovery, whether a new medical advance, an amazing new fossil, or a reservoir of fresh water underneath the ocean floor. We can send probes outside our solar system, send humans to the moon, make babies in test tubes, genetically modify food and communicate instantly with anyone anywhere in the world. Science is amazing and wonderful. Our lives are better because of these scientific advances.

In our scientific age, however, the broad scientific community has assumed an absolute ideological authority, often shutting down opposing theories and stifling inquiry. All scientists bring their presuppositions and assumptions to their work. At MCA, we encourage students to identify the underlying assumptions of scientific claims, to consider multiple explanations for evidence, and to closely examine the merits of conflicting theories. The work of science is the work of open inquiry, and inquiry is at the heart of a classical education. Modern science asks only questions that are empirically verifiable, and in doing so, eliminates other rational lines of inquiry. At MCA, the inquiry model we use is inspired by Aristotle, who asked four important questions about each phenomenon in the physical world: 1. What is its origin? 2. What is its form? 3. What is its substance? 4. What is its end (purpose)? Some of these questions can be seen, touched, and measured. Other questions require pondering, research, and rational thought.

A true inquiry into the natural world in this manner will naturally lead to wonder. If science instruction is no more than a transmission of factual information, we have missed its deeper purpose. If we analyze the parts, which is important, but neglect the wonder of the whole, we have missed the joy that true inquiry should inspire. Scientific inquiry brings us into close contact with the truth, goodness and beauty that is real and present in the natural world. True scientific inquiry speaks to our minds and our hearts and takes our breath away! Millennium Charter Academy's guiding document on science begins this way:

Whether observing the tiniest specks of life through a microscope or gazing at a star-studded sky, the purpose of the sciences at Millennium Charter Academy is to understand the beauty and order of the physical world and to understand our relationship to that world. Through inductive and deductive methodologies, through empirical inquiry and rational inquiry, and through integration with the entire body of learning present in the curriculum, we explore the complexities of the world around us and encounter wonders that enlarge and mature our hearts and minds.

The scientific enterprise is well worth our engagement and dedication. There are yet many discoveries to be made, worlds to explore, humans to help, all through the means of science. We hope that many of our students choose careers in science through a true heart's desire to understand the beauty of the natural world and to



use their knowledge to benefit their fellow human beings. While all that is good and laudable, we must ever remember that there is more to reality than science can ever measure. The good, the true and the beautiful can be touched through scientific inquiry, but they ultimately transcend science. This short poem, *Beauty and Science*, may leave you pondering the relationship between science and beauty, and between the material and the transcendent.

*Science says
A beautiful face is the summation of the most average of
A set of characteristics our evolutionary development
Has programmed us to recognize,
Nature's way of maximizing the probability
That the best genes survive.*

*Science says
Beauty releases endorphins in the brain,
Polypeptides made of amino acids
Responding to stimuli,
Lending the body a sense of euphoria,
A free morphine-like high*

*Science says,
Beauty, mathematically expressed, is a ratio of 1.618
Explaining clearly why men prefer women
of such elegant proportions.
Pleasing geometrical configurations of symmetrical lines
from an ancient memory.*

*Science says
Nothing at all about why this is so
Nothing at all about how these marvels came to be.
Ignoring my soul
And its longings for an apprehension of pristine beauty
From a time out of mind.*

Pamela J. Braley

Upper School Director

