The Paideia

April 2010

Why do Good Schools Need Great Math? Let Me Count the Ways ...

Co-Authored By Nathan Pegors, Upper School Science & Mathematics and Todd Wagenmaker, Headmaster

Some classical schools give short shrift to mathematics. "With only so much time in the day and so many great books to read, why take valuable time away from philosophy and literature to focus on math?" There are three reasons why mathematics is at the heart of a solid classical education.

First, historically, math has always been valued by classical education. From times past, Greek and Medieval teachers alike have used mathematics to forge the minds of the young and ignorant. Plato himself wrote, "Let no one ignorant of geometry enter here" over the entrance door of his famed academy. Not only did he believe that mathematics was the gateway to a great education, he also believed that mathematics would build the mental acumen necessary for philosophy.

Following Plato, in Medieval times, early classical training used the Trivium.* Classical students would graduate from the Trivium to the Quadrivium, which included the study of number in itself (arithmetic), number in space (geometry), number in time (music), and number in both space and time (astronomy). At the heart of the Quadrivium, then, mathematics played an integral role in Medieval classical education.

Speaking of the Trivium, the dialectic or logic stage of the Trivium is the study of how the grammar/facts fit together.

What discipline teaches the understanding of how items fit together and relate to one another better than mathematics? Mathematics is arguably pure dialectic. The second reason mathematics belongs at heart of a classical education, then, is math embodies one third of the Trivium.

Finally, some value math because of its pragmatic benefits ("you can get a good job in the sciences"). Wise Plato would disagree with this pragmatic emphasis. In the dialogue with Meno, Plato illustrated that mathematics is bound in the souls of men, that it is a bridge to bring a student beyond the physical world into the heavenly realm. As Christians, we agree with Plato that math has been created by God and is inherently good and shows God's goodness.

Plato by Giovanni Pisano, marble, c1280

Far from being a necessary evil or a pragmatic good, math is at the heart of classical education. At Providence, we believe that you cannot receive a classical education (let alone a **solid** classical education) without a solid or great mathematics program.

Upcoming Events

April 22, 7pm— Senior Thesis Presentations
April 30—Physics Day at Six Flags, 9-12th Grades

May 4-7th—5th Grade Trip to Colonial Williamsburg, Virginia
May 14—Field Day
May 17—Kindergarten Graduation
May 18—Last Day of School, 12pm dismissal
May 18, 1pm— 6th Grade Graduation
May 21, 7pm— All School Award Ceremony and Senior Graduation

Aug 18—1st Day of School, 2010/11
Aug 18, 7pm— State of the School Meeting

For additional information and times, please visit our website: calendar ProvidenceSTL.org

*The Trivium is the core of the classical education model, and represents three parts: Grammar/Facts, Logic, and Rhetoric.

PCCA Seniors are College Bound ...

A wide range of opportunities is open to our graduating seniors. The PCCA experience culminates in upper school by preparing students for college and life. We strive to develop in them a strong love of learning, and to graduate individuals who can speak and write eloquently and persuasively, and that appreciate what is true, good and beautiful.

Eliza Barger —

Eliza will attend Covenant College in Lookout Mountain, Georgia next fall. She plans to pursue a degree in art, and she has received the following scholarships:

- Covenant College Scholarship
- Promise Church Scholarship
- Presidential Scholarship

Kaellyn Marrs —

Kaellyn will attend Concordia Universisty in Seward, Nebraska to pursue a Bachelor of Science in Secondary Education with Music and English endorsements. She plans to teach high school music and English. Kaellyn has received the Regents Scholarship through Concordia University.

"For I know the plans I have for you", declares the Lord, "plans to prosper you and not to harm you, plans to give you hope and a future." Jeremiah 29:11

SHAKESPEARE IN A WEEK

This year's *Shakespeare in a Week* presentation featured **A Comedy of Errors**. Although lines were learned ahead of time, everything else — costume making, rehearsal, set design and building, etc. — was completed in one calendar week. Special thanks to our drama instructor, Ms. Serena McCarthy. Congratulations on a fantastic performance!

Main Cast of Characters
Antipholus of Ephesus—Nathaniel Whitfield
Antipholus of Syracuse—David Wagenmaker
Dromio of Ephesus—Blake Taylor
Dromio of Syracuse—Evan Taylor

A Classical Math Curriculum for Grammar Students

By Julie Wagenmaker
Teacher — 1st Grade

The *Right Start Mathematics* program written by Joan Cotter, PhD, effectively teaches mathematics according to classical pedagogy. To be classical is to focus on skills; the subject matter is the medium on which we practice these skills. Mathematics that is classical therefore must focus on skills. The most foundational skills of our mathematics system include the ability to subitize and an understanding of place value. *Right Start* prioritizes these two skills as essential tools for the understanding of all other beginning mathematical operations (addition, subtraction, multiplication, division.)

Subitizing is the ability to recognize a number without counting. Research has shown that even 5-month old babies can recognize the difference between a set of 2, 3, or 5, and obviously they cannot count. The traditional American approach to teaching mathematics has focused on counting, which is slow, tedious and prone to error. In contrast, the Asian approach focuses on seeing numbers in groups. Because of this, Asians have had an advantage in learning to subitize (no one can dispute that, on average, Asians are more successful at math.) Joan Cotter designed a specific abacus to enhance the students ability to "see" numbers in groups. Each abacus has 100 beads, ten rows of ten. Each ten is bisected; one side yellow, the other blue. After 50, the blue and yellow sides reverse. This helps the student visualize half of 100. As an aside, not only does the abacus provide a tool to enhance subitization, but it provides the multisensory exercises that concrete learners need.

The traditional American approach to teaching mathematics has focused on counting, which is slow, tedious and prone to error.

The other foundational skill of our mathematical system is an understanding of place value. The concept of place value is a large scale subitizing. Our base ten system puts quantities in groups of tenths, ones, tens, hundreds, etc. Side two of the abacus has four columns representing the ones, tens, hundreds and thousands place. This provides a concrete, multisensory tool with which to learn place value. Another way Joan Cotter emphasizes place value is the way she re-names numbers. The Korean language inherently reveals place value in its number names. Mimicking this, Ms. Cotter names the numbers with the definition of the number "built in" — 10 is called 1-ten, 13 is called 1-ten-3, 35 is called 3-ten-5. For a young child who has had some experience with the abacus, the name 1-ten-2 has an immediate value (one row of ten, and 2 beads). The name twelve remains meaningless. The number name fifty-four also does not communicate the value of either digit, whereas 5-ten-4 brings an immediate visual recognition of what each digit represents. Also, 365 is called multiple names: 3-hundred-6-ten-5 or 36-ten-5. The traditional English names are also taught, but only after the concept-revealing name.

Because in the traditional American approach there is a heavy emphasis on the "skill" of memorizing operational facts (addition, subtraction, multiplication, and division), one may ask, "Do the children learn their facts well?" The answer is a resounding yes! In fact, *Right Start* goes beyond rote memory of facts. By focusing on these foundational skills of subitizing and place value, the children understand what these facts represent. Making the abstract concept of addition concrete (with the abacus) provides understanding. Instead of rote memory skills where 3 numbers (e.g. 6, 4, and 10) are abstractly connected, Joan Cotter has developed games where the concept of the operations (addition, subtraction, multiplication, and division) are practiced until they are retained in the long term memory. Games obviously engage children more than rote drills. Competition motivates and more areas of the brain are engaged.

Providence's *Right Start Math* curriculum is truly classical in that it teaches students how to think mathematically. Since our goal is to graduate critical thinkers, a curriculum like *Right Start* is needed so students not only understand math, but also learn how to think.

Auction Held February 19th

It was an honor to chair Providence's annual auction. With the help of a wonderful committee and the grand efforts of teachers, students and families alike, we raised almost $75,000 making it our most successful auction yet. Much thanks to my auction team members: Melissa Luther, Barb Bosch, Angie Porter, Elizabeth Renner, and Shannon Mette. The evening was fun and filled with competitive giving, delicious desserts, and a crazy competition for an iTouch and Bose Speaker System. I look forward to next year. Set your calendar for Friday, February 25th! We've already reserved the auctioneer, David O'Shaugnessy and anticipate his comedic wit to make us laugh all over again

. — Jean Bergeson, Chair

Homeroom Auction Project Winners:

Garden Basket—*Best Presentation* by Homer Homeroom and Mr. Klousia. This homeroom won a breakfast of Krispy Kreme and hot cocoa!

Coffee Basket — *Best Money Maker* by Pythagoras Homeroom and Mr. Pegors. This homeroom won a bowling party at Crestwood Bowl and Mr. Pegors received a $25 gift card to Barnes & Noble.

Thank you to all teachers, students and families who helped make this year's auction the most successful yet!

Student Proposal of Law — EQUAL ACCESS

Every year, the final writing exercise in the 8th grade, is a proposal of law. While this year's students begin work on this exercise, we are still tracking the success of last year's proposal. As you may know, last March, the students presented an Equal Access Law to the Missouri State Senate. The proposal questioned the state's practice of allowing only public high school students access to sports programs. All Missourians — including parents of private school and home school students — pay for these programs via taxes. This inequality is in direct violation of both state and federal Equal Access Acts that are already in existence. The proposal was accepted for consideration and, after being researched, it became SB 788 and was read on January 25, 2010 by Senator Jim Lembke. Senator Lembke is an advocate for the rights of taxpayers. Now known as LR4401S.011, the proposal has been forwarded to the Education Committee and given a calendar position for possible voting on August 28, 2010.

PCCA is Growing! Update from the Building Committee Chair

PCCA is growing, and the School Board has identified the need for a new facility. Although this is an exciting time, many challenges lay ahead. Please pray with us as we look to the future and seek God's direction. Here is an update from the Building Committee chair and PCCA parent, Thad Leach —

"The Building Committee, comprised primarily of parents, has been formed and is meeting regularly. We are focusing our efforts on defining goals and challenges. Going forward, we expect that we will be simultaneously working on facility designs and needs analysis, and we are also realistically discussing minimal needs. No timeline has been established for the successful completion of our work, but we are working diligently, we are committed to doing this well, and everyone is committed to seeing this through."

PLEASE SUPPORT OUR MINISTRY TO PROVIDE CLASSICAL, CHRISTIAN EDUCATION.

General Gifts
A general gift is used to meet the most pressing needs and priorities of Providence. General gifts are useful because of their flexibility.

Monthly Gifts
Monthly gifts allow us to more precisely budget our expenses and income. Most financial institutions allow you to set up an automated payment plan.

Designated Gifts
If you have a desire to support a specific program, such as our athletic program or tuition assistance for needy families, please specify this when you make your donation.

Memorial Gifts
If you would like to commemorate the loss of a loved one with a gift to Providence, we will notify the family of your generosity.

Every gift is a blessing. Please mail your gift today to:

PCCA
5293 S. Lindbergh Blvd.
St. Louis, MO 63126

Providence is a 501(c)3 charitable organization. All donations are tax deductible.

THANK YOU FOR PARTNERING WITH US.

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