

Explore Global Opportunities for Mathematics Scholarship, Teaching, and Service

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Many members of ACMS have more extensive overseas experience than I have and are more qualified to address the potential of mathematical global involvements on both personal and professional levels. These people are really not my primary intended audience. For those of you who have little or no overseas professional experience, the goal of this paper is two-fold: 1) to stimulate your thinking about international opportunities and how they might pertain to your professional interests and expertise, and 2) to provide some ideas about how you might get started.

The realization that I could use my mathematical knowledge and experience in an overseas setting came relatively late in my professional career. Even from childhood, I have always enjoyed the rewards of travel. But, my journeys were for personal enjoyment and enrichment. It was only about six years ago that I began to connect my professional and personal development goals in a global context. This brief paper will describe some of my recent global experiences within the framework of the three primary domains of academic work: scholarship, teaching, and service. Although we often distinguish these areas of our work, I have learned that in many global experiences, there is often much overlap among the three. Because there is neither time nor space to provide a detailed description of each trip, I would like to provide a brief overview of each of the three types of global experiences in which I have recently participated.

Teacher Mentoring (Teaching and Service)

My first experience in overseas teaching and service occurred in the summer of 2007 when I joined a Teacher Mentoring Team to Liberia, West Africa through Hope Corp, a ministry arm of World Hope International. WHI describes itself as “a faith-based relief and development organization alleviating suffering and injustice through education, enterprise and community health.” The organization provides a variety of services to developing countries. Such services include anti-trafficking programs, education, child sponsorship, HIV/AIDS prevention and treatment, water projects/well drilling, microfinance loans, and rural development. The Hope Corps Teacher Mentoring program provides professional development workshops for teachers, primarily those teaching in Christian schools. I first learned about the organization through my local church and denomination which has a working relationship with World Hope. I became even more interested when a friend participated, as a science teacher, in a Mentoring Team to Sierra Leone in 2005.

My team consisted of 5 teachers, four from the U.S. and one from Germany, and a college-aged photographer. In a week-long workshop, we provided instruction in teaching reading, math science, and in child psychology and in biblically-based classroom management strategies. Approximately 85 teachers, from PreK – 9th grade, attended the classes held in an elementary

school and church near Monrovia. The instruction in math encompassed both content knowledge and teaching methods because both areas were of critical need to the teachers. Most of them had no or minimal teacher training and also lacked much depth of understanding in mathematics. They had been taught math via rote learning and memorization and that was the only model of instruction with which they were familiar.

I prepared booklets of instruction and activities for 4 levels of classes, based on the five NCTM content standards (*Principles and Standards for School Mathematics, 2000*): number and operations, algebra, geometry, measurement, data analysis/probability. During the workshops, we worked through many hands-on activities to illustrate the meaningfulness, relationships, and logical nature of mathematics.

Two years later, in 2009, I joined another Mentoring Team to Haiti. Approximately 115 Haitian teachers attend the workshops held on the grounds of a seminary near Port au Prince. These workshops were partially funded by a grant from USAID for HIV/AIDS prevention and treatment. The organization of this workshop was similar to the one in Liberia with teachers receiving instruction in math science, and language arts content and pedagogy.

My experiences in teaching math at K-12 levels, before joining higher education, were great assets in these two overseas teaching/service experiences. Even so, there were many challenges that probably apply to most developing countries. These include meager facilities, lack of desired teaching/learning resources, climate differences, culture and language issues (we did had translators for Creole in Haiti), and the wide range of teachers' backgrounds, experience, and knowledge. For example, some participants had many years of teaching experience while others were just beginning their teaching career. Those of you who have been on any kind of "missions trip" to a developing country will certainly understand many of these obstacles and probably be able to add your own list of "challenges" to mine.

Despite the challenges, these kinds of opportunities are tremendously enriching as well. These overseas experiences have expanded my creativity, challenged my flexibility, enlarged my perspectives, and strengthened my faith. When you don't have the teaching materials to which you are accustomed, you learn how to make do with what you do have and explain things in different ways than you've ever done before! When your schedule keeps being altered and your plans are always tentative, you learn to be more flexible! When you encounter new ways of looking at customs, resources, people, and life in general, your perspectives are forever enlarged! When you have the opportunity to join other believers in worshiping in diverse cultural settings and worship styles and to see God working in amazing ways around the world, your faith in the power and grace of God is confirmed and tremendously strengthened!

International teaching has provided a new "reference point" for many of my subsequent personal and professional experiences. I find that I have much more patience with the occasional inconveniences of everyday life in the United States. Things like the lack of air conditioning or

modern facilities or resources, or the appearance of potholes in my street, or crowded conditions on a bus, or delayed and cancelled flights have lost much of their “power of annoyance” over me. I merely think back to more challenging circumstances I’ve encountered overseas and realize that “I can handle this.”

I now believe that the process of mentoring teachers in a developing country can be thought of as “service learning for the mentors.” Assisting in the training of inadequately prepared teachers/mentees is indeed a service with far-reaching effects for the teachers, students, and community development. But it also includes a lot of learning for the mentors as well. There is no way to describe or identify everything I have learned through these interactive relationships with teachers in developing countries. These are great opportunities to serve and encourage others with whom you share common goals. I believe it is a “win-win” outcome for everyone.

I have talked about one organization (World Hope) because that has been my experience. However, there are a number of similar humanitarian organizations (some with a Christian foundation) that you might want to investigate. Perhaps some are affiliated with your church or other ministries with which you are already acquainted. The last page of this paper provides a partial listing of some organizations you might want to investigate for overseas opportunities.

MAA Study Tour (Scholarship)

In the spring of 2011, I joined with about 24 others to participate in the MAA Study Tour that year. It was entitled “Mathematics among the Ancient and Modern Maya” and included visits to Guatemala and Honduras. This well-organized and event-packed tour included explorations of ancient Mayan city ruins, various museums, and nightly lectures and discussions led by our archaeologist guide to investigate the ancient Maya civilization. We learned how to interpret Mayan glyphs of numeration, calendars, and historical events. This is information about the history of mathematics that I can readily incorporate into some my current college courses.

Just as interesting to me were our encounters with the current Maya (indigenous) people of Central America. As we visited numerous scenic, historical, and cultural sites, we learned how the modern Maya have both preserved their subculture but also been influenced by the larger “Spanish” culture around it. This was a time of heightened interest in studying Maya history and culture since many people were wondering then if the world would come to an end in December 2012, the end of the Mayan long-count calendar (it didn’t).

As our group engaged in myriad topics on our study tour, I began to notice how multi-disciplinary our study had become. So, I started writing down some of the areas that were being addressed: religion, astronomy, mathematics, geography, archaeology, cultural anthropology, history, sociology, philosophy, political science, economics, geology, biology, chemistry, ecology, physics, music, art, linguistics, archeoastronomy.... It was definitely the most interdisciplinary ten days of my life!

Depending on the destination, some trips may be somewhat expensive. Because of the international and academic nature of the trip, I did receive significant financial assistance from my university. Previous MAA Study Tour destinations, beginning in 2003, have included Greece, England, Mexico, Euler (Germany/Russia), Peru and Galapagos Islands, Egypt, and Italy. For more information on past and future tours, see: www.maa.org/StudyTour

Fulbright Specialists Program (Service and Teaching)

In the summer of 2010, I applied to the Fulbright Specialist Program with hopes that I could include a short-term international experience as part of my sabbatical during the spring of 2011. Because of various timing issues and the number of steps necessary to finalize all arrangements, that did not work out. However, I was accepted to the Fulbright Specialist roster in January 2011 and completed a two-visit experience in Ecuador in 2012 and 2013.

The Fulbright Specialist program awards grants to support short-term (2-6 weeks) overseas experiences for qualified U.S. faculty and professionals in select disciplines in over 100 countries. It promotes linkages between U. S. academics and professionals and their counterparts at host institutions overseas. Approved projects focus on strengthening and supporting the development needs of the host institutions abroad and is not intended for personal research purposes. Eligible activities include short-term lecturing, conducting seminars, teacher training, special conferences or workshops, collaborating on curriculum planning, institutional and/or faculty development.

Here is an overview of how the program works. U.S. faculty and professionals apply to join a Roster of Specialists for a five-year term. Roster candidates are reviewed by peers in the same discipline and by the J. William Fulbright Foreign Scholarship Board. Eligible institutions wanting to host a Fulbright Specialist submit project applications through the Fulbright Commissions or U.S. Embassies in their home country. Projects are reviewed and approved by the Fulbright office in their home country and the U.S. Department of State.

In essence, the Fulbright program serves as a clearinghouse or “matchmaker” between U.S. specialists and overseas project applications. However, in practice, it appears that many or most specialists secure their own placement by contacting the overseas institution first and coordinating with them to structure the host’s project description to match the qualifications and interests of the specialist. That was the situation in my case.

My project involved working with the University of Azuay (UdA) in Cuenca Ecuador. I chose to work at this particular university because of prior relationships between UdA and some of my colleagues at Taylor. But if you already know someone associated with an overseas institution, that might be a good place for your initial contact.

My work at UdA including the following activities: presentations to math faculty on research-based instructional strategies, formation of a professional development model for mathematics

instructors, consultation/advising on the creation of a mathematics department and a master's degree program, course curriculum evaluation, and conducting workshops for math teachers at an affiliated high school.

In addition to my academic work, Ecuador was a wonderful place to visit. I was able to live with a gracious host family, worship in several churches, fellowship with missionary friends, visit Cajas National Park and Ingapirca (Inca ruins), and participate in many other local cultural events. It was a great opportunity to build new personal and professional relationships that, I hope, will continue.

Another benefit from the Fulbright Specialist Program is that Fulbright pays your travel expenses to the host country and the host institution is responsible for your in-country expenses, including transportation, housing, and food. In addition, Fulbright provides an honorarium of \$200 per day for each day of the trip (including travel days).

See this website address for more information on the program:

<http://www.cies.org/specialists/>



A Word of Advice in Getting Started

If you have not traveled abroad professionally, a missions-type trip (e.g. teacher mentoring or other work) can be a good place to begin, if you have the necessary qualifications. Study Tours are also great ways to begin because they are highly structured and organized, leaving little for the participant to worry about. No previous experience is necessary; just jump in and enjoy the trip! I highly recommend the Fulbright Specialist Program but you may want to wait to apply for it until you have some previous overseas experiences to strengthen your qualifications. The following page provides some links to organizations that might have international programs that would be a good fit for your interests.

Conclusion

I want to close with two quotes that I love and that express important ideas that I have found to be true in my global experiences. The first comes from Miriam Beard, *“Travel is more than the seeing of sights; it is a change that goes on, deep and permanent, in the ideas of living.”*

The second is from the late Rev. Bruce Larson, *“Every Christian is launched on a life of experiment, discovery, and faith from which he can report on new ways that God may be working in specific situations.”* I think that this perspective is especially true for those of us teaching in the sciences in Christian higher education. This life of “experiment, discovery, and faith” can be lived out anywhere, but I believe that international experiences multiply our opportunities to discover and participate in the many amazing things God is doing around the world.

Opportunities for Overseas Experiences in Mathematics

ACMS Biennial Conference: Bethel University
May 30, 2013

Beyond Borders

www.beyondborders.net

Cross Cultural Solutions

www.crossculturalsolutions.org/Choosing_your_program

Fulbright Specialists Program

<http://www.cies.org/specialists/>

Global Links—Global Educators Program

www.global-links.org

Helps International (Guatemala)

www.helpsintl.org/programs/education

International Teacher Training Organization—Teach English Overseas

www.tefl-tesl.com

Mathematical Association of America Study Tours

www.maa.org/StudyTour

Project Teach Haiti

www.project-teach-haiti.org

Study Abroad—Teach Abroad Programs

www.studyabroad.com/teach

Teach Abroad

www.teachabroad.com

Teachers Without Borders

www.teacherswithoutborders.org

United Planet

www.unitedplanet.org

World Hope International

www.worldhope.org/hopecorps/shortterm.htm

World Teach

www.worldteach.org



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