

Reflections on Montclair State University–Beijing Connection

By Mika Munakata and Aihua Li

At this year's national meeting for the NSF GK–12 graduate fellows program, NSF Director Arden Bement cited international collaborations as a focal point of NSF efforts. Scientists and mathematicians must be able to function within the global setting and must seek opportunities to engage in cross-cultural partnerships. In particular, there is an urgent need to expose undergraduate and graduate students to international research opportunities. NSF's commitment to international collaborations is demonstrated by funding for international projects. Recently, our GK–12 *Fellows in the Middle* program at Montclair State University (NSF Award #0638708) received a supplement to establish an international component to our existing project.

Supported by the supplement and by considerable contributions from the university, in January 2008 17 GK–12 project participants spent two weeks in Beijing, China. The group included four graduate students (Fellows), three middle school teachers, two university faculty members, four project staff, and the superintendent of a local school district. The main goal of our visit was to form international partnerships for all of our participant groups. Less tangible goals included deepening the participants' understanding of cultural differences and having them practice effective cross-cultural communications and collaborations.

During our stay in Beijing, the Fellows, teachers, and university faculty often moved in different circles. The Fellows each spent about four days at a university in Beijing. Our partner universities were University of Science and Technology Beijing, Beijing Normal University, Beijing Jiaotong University, and China University of Geoscience. Each Fellow was paired with a member of the research faculty at one of these universities and was introduced through him/her to graduate student partners. The science Fellows learned new techniques of biological research and saw state-of-the-art laboratories. The mathematics Fellows worked with Chinese graduate students on reading and analyzing papers and



Welcome banner to US-Sino Workshop in Xi'an

presenting their research to small groups. One mathematics Fellow commented that “it was very interesting for me to see the types of problems the math graduate students were working on. For example, they were working on optimization problems involving traffic — which they can really use.” The Chinese students were particularly interested in presenting their research and to practice their English communication skills. Aside from the research experiences they gained, the US Fellows established some important contacts. As one Fellow put it, “meeting with fellow researchers at Beijing Normal University was a tremendous experience where I was able to develop international collaborations that I hope will last my

entire research career.”

The teachers visited several middle and high schools. There, they met teachers and students, observed classes, and gave sample lessons to the students. We were all intrigued by some of the differences we saw. The Chinese teachers we met teach just two classes each day, but teach about 60 students in each class, which means that the total number of students taught by one teacher per day is not too different between the two countries. But having only two teaching periods means that the teachers are able to meet more often with their colleagues. They collaborate on lesson planning, assessment, and reflection on lessons. They visit each



Middle School students at Xisi Middle School in Beijing.

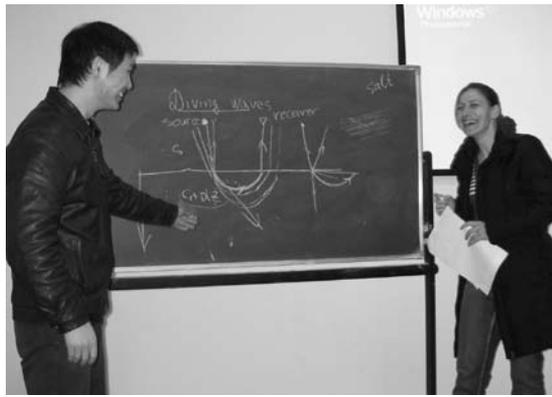
other's classes frequently and offer feedback.

While the Chinese teachers seemed accustomed to working together outside the classroom, they were interested in learning about our project's models for co-teaching interdisciplinary lessons. In fact, in keeping with the structure of the GK-12 program, one pair of US teachers team-taught an interdisciplinary lesson on natural selection that relied on statistics. One of the presenting teachers commented that "traveling to China and being immersed in a culture so different to me was unforgettable. However, as a teacher, visiting the schools and being invited to present a lesson to a class of Chinese middle school students was an experience I do not think I will ever equal."

The US university faculty members met with Chinese researchers and gave several presentations. The topics included descriptions of our grant activities, mathematical problem solving, research projects in Antarctica, and astronomy. We also participated in several colloquia with Chinese educators. Of particular interest to us was the panel discussion with members of the Ministry of Education, the Institute of Education at Beijing Normal University, and several mathematics textbook authors. These discussions lent a new perspective to our observations of the Chinese mathematics classrooms.

In addition to our professional activities, Montclair State University's GK-12 team visited many historical sites such as the Great Wall, Forbidden City, and the Terra Cotta Warriors in Xi'an. We also visited mathematics and science-related sites including the Peking Man geological site and the Beijing Planetarium. With the Beijing Summer Olympics fast approaching, it was fun to be able to see some of the landscape and city life that later arrived through our television sets.

While we were busy with research activities, visits to schools, and sightseeing, the most important element of the experiment was the cultural exchange. We wanted to expose the graduate students to the



US mathematics graduate student Daniela Kitanska presenting her research to a Chinese mathematics graduate student.

opportunities and challenges associated with international collaborations. Before our visit, Aihua (who is originally from Beijing) led four afternoon Chinese language and culture workshops. While these workshops helped all participants learn basic Chinese greetings, everyone was humbled by the difficulties associated with being immersed in a different language. It is important for those unaccustomed to cross-cultural and cross-linguistic interactions to be aware of these challenges and to think about how to adjust to them. Similarly, we wanted the participants to think actively about how differences in culture can often



The group at the Wild Goose Pagoda in Xi'an.

impact how people learn, teach, conduct research, and communicate.

This May, we hosted three colleagues from Beijing: a physicist, a professor of mathematics education, and a biology professor. During their 12 days in New Jersey, they visited middle schools; pre-

sented at various venues including a professional development workshop, an Optimist's luncheon, and at our middle school Math and Science Day; and met with us about possible collaborative projects. They were also able to visit tourist sites around New York City and were invited to many barbecues.

Next January, we will return to Beijing with different participants to further strengthen our partnership. It is the hope that our partnership with the four universities in Beijing will serve as a springboard for sustainable international programs for our science and mathematics graduate programs. In Years three and four of our funding period, we will partner with colleagues in another country in a different part of the world.

Our experiences in Beijing were eye-opening for all of our participants. (For several of the participants, this was their first experience abroad.) The teachers gained new insights into the teaching of mathematics and science. The graduate students became exposed to the idea of international collaborations. The university faculty established connections that will undoubtedly lead to collaborations in the future. Regardless of the individual experience, however, all of us are very grateful to our Chinese hosts. From the graduate students who took our Fellows shopping, to the middle school teachers who shared their experiences with us, to our Chinese colleagues who helped us organize and coordinate the visit – everywhere we went, we were met with a warm welcome. Their hospitality and common interests make us hopeful that this will be a long-lasting partnership.

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