High School Math Circuit. Larry Smolinsky, Chair LSU Department of Mathematics

3/3/2009

Concept.

The High School Mathematics Circuit was proposed as part of the LSU VIGRE grant program. It was then subsequently added to the BoR enhancement grant "Human Resource Development in Mathematical Science" as a VIGRE enhancement (if VIGRE was funded—as it was) or as a worthwhile standalone outreach program. The VIGRE proposal describes the circuit that a faculty member and a graduate student will visit regional high schools, "traveling in one large circuit like an old circuit court." The concept was to hold regional talks for a sizable audience, "fun and interesting mathematical talk—perhaps akin to the Serge Lang high school talks." The VIGRE proposal reads, *"The primary purpose of the Mathematics Circuit will be to encourage students to enter mathematics wherever they may eventually attend college...."* While the mathematical enrichment and recruitment of mathematics majors from high school students is not explicitly mentioned as part of the VIGRE program, the transition from high school to college is recognized as a key transition point in ESW21 and is clearly relevant to the pipeline philosophy of VIGRE.

Implementation.

Since the concept is to bring mathematics to potentially talented students in areas where students may not have seen any outside of high school curriculum, I initially did not wish to include areas that may have enrichment via local universities: In addition to Baton Rouge (LSU), there are three Louisiana Tech University in Ruston LA is near Monroe and has a master's degree program; University of Louisiana in Lafayette has a PhD program; and, Tulane University in New Orleans has a PhD program and is a VIGRE department.

The project developed as follows.

December 2008. I attempted to contact four high school principals at selected schools in Shreveport, Lafayette, and Lake Charles, as well as the Louisiana School for Math, Science, and the Arts. Three responded favorably and put me in contact with their mathematics chairs. The fourth did not respond to several email messages and telephone messages.

January 2009. Arrangements were made. Bogdan Oporowski put together a flyer/poster from material I supplied. I put together material to recruit students into mathematics (1) in support of mathematics as preparation for professional school (2) material on the LSU mathematics major. Jacek Cygan made a flyer/poster for the LSU Mathematics Contest

for High School students and Scott Baldridge put together a flyer for the high school summer math circle.

I prepared the talk, which took which took several man-days of work. It was a Latex Beamer presentation. Carolyn Chun (VIGRE Trainee) agreed to accompany me on the three-day trip. We told our high school contacts that we would make ourselves available to meet and talk with students and faculty.

Caddo Parish Magnet High School

At Caddo Parish Magnet High School, the program had good support from the Principal who recognized it as significant for students and the school. The head of the mathematics department showed Carolyn and me around the school and facilities. Caddo Magnet has rich programs and strong students. They clearly had good results and facilities for art, music, and quite a lot of foreign language. From the time the program was conceived, I had hoped to introduce a mathematical presence in Shreveport. It is the largest population center in the state without a major university to have a hand in significant mathematical enrichment.

Attendance at the talk was 275 people with 165 male, 105 female and 60 minority students. The count was performed by Carolyn and was not done by survey. The students were attentive. Several came up at the end to thank me and ask questions.

The Louisiana School for Math, Science, and the Arts

"The Louisiana School for Math, Science, and the Arts (LSMSA) is a preeminent state supported residential high school with competitive admissions for high ability students. Students apply during either their freshman or sophomore year for the opportunity to attend LSMSA for their final two or three years of high school." It is a public school and there is no tuition and only a nominal room and board fee. It is substantial investment of the state and very selective with an enrollment of about 400 students.

The talk was scheduled late in the day at 4pm. There are always competing activities at the Louisiana school. Earlier in the afternoon we had to vacate the conference room where we were meeting students on in individual basis because the Vonnegut class had a videoconference with the screenwriter of the movie Mother Night. At 4pm there was a competing science event. The event was publicized to the with two announcements in the local paper and the local high school Natchitoches Center also received posters publicizing the talk. I met with several faculty members during the day and observed and spoke to a Calculus III class. Carolyn met with several students on an individual basis.

Attendance at the talk was 35 with 16 male, 19 female and 4 minority students. There were likely a couple of people from outside the Louisiana School who arrived shortly after the talk began. The count was performed by Carolyn and was not done by survey. There were quite a few questions from students and faculty during and after the talk.

Alfred M. Barbe High School, Lake Charles LA.

At the Barbe High School we had little interaction with students or faculty prior to the talk. Attendance at the talk was 64 with 29 male, 35 female and 7 minority students. The count was performed by Ms. Chun and was not done by survey.

Lessons for the future.

The turnout of students was very good as was the reception from faculty. It was a substantial investment of time and energy, and, to get the proper benefit, we should set some conditions for a school to host. A school will have to view the activity as a valuable activity for students and for mathematics faculty—not as a recruiting visit. I believe that principals should agree to a few conditions.

1. Students interested in math should be excused from other classes to attend the lecture. Furthermore they should be encouraged to attend. One teacher described it as an inhouse math field trip.

2. Teachers teaching advanced mathematics classes that are scheduled simultaneously with the talk should be told to bring their classes.

3. The talk should be scheduled toward the end of the school day, should be publicized to other schools. Students and teachers form other high schools should be welcome to attend.

Only item #2 seemed to be an issue. High school department chairs are hesitant to exercise their authority (or do not have the authority) to require teachers of AP and advanced classes to bring their class. It should be clarified with the principal early in the process.



The presentation at Caddo Magnet High School in Shreveport Louisiana.