

Archived Information

University of North Carolina at Charlotte
Center for Mathematics, Science, and Technology Education

Activities involved with improving teacher quality

Summer Institutes for Teachers in Algebra, Geometry, and other Mathematics

Goal area of the activity: Our goal is to enhance the mathematical knowledge of each and every teacher so that that teacher has a better appreciation of mathematics and has a knowledge of mathematics that will take them beyond what they teach.

A brief summary: We have worked in cooperation with the Charlotte-Mecklenburg Schools to develop a three year plan of offerings for all teachers of Mathematics in middle and secondary schools which will extend their knowledge of mathematics and help them become better teachers of the content. The institutes are 2 weeks long with each class meeting for ½ day each day. This allows time for students to think about and digest the material given to them each day before going further. Classes are taught in a manner that models the manner of teaching in high school: some lecture, some small groups, some discovery learning. The classes are taught in the summer and each teacher pays a minimal enrollment fee (\$25 per class) just to guarantee a count for the initial enrollment.

Purpose: For the "lateral entry", or alternatively licensed teacher, we want to cover the mathematical content of the course that they are going to teach while indicating appropriate methodology and pedagogy with each topic. Not only are they learning the material, but they are learning how they might teach that same topic to their students. We spend some time in discussing areas of difficulty that students will face in understanding the topic. For the experienced teacher we offer courses that will expand their knowledge and show them where in the curriculum the students will be using the concepts. We offer courses in Discrete Mathematics, Trigonometry for Algebra teachers, Calculus for Algebra II and Precalculus teachers, and the like. We do this so that the teachers will see where and how the concepts that they introduce will be used in the curriculum later in high school and in college.

Accomplishments/Results: We ran this particular institute for the first time in the Summer of 2002 and we registered more than 240 teachers in our classes. We are in the process of surveying the teachers to find out how they feel that the classes prepared them for their teaching this year. We have had a number of comments – all positive – about the classes. We feel that we have had an impact on the mathematical education of the students in the Charlotte-Mecklenburg Schools.

Plans for the next 12 months: We will be offering the second year of our three year course plan this summer. In the meantime, we are offering workshops in the schools and at teacher workdays in order to follow up on the content and to see what problems may be arising. These institutes will be open to all schools in the region surrounding Charlotte – not just to CMS teachers.

We are looking at many different ways to get the teachers to attend classes and workshops that will help them enhance their mathematical knowledge. We are looking at offering a class on Algebra and teaching Algebra during the Fall Semester. This class would have a very different structure. It will be offered on Saturdays. It will begin after the teachers have started school. It will cover content and methodology. It will offer teachers an opportunity to discuss how to teach certain topics. The morning session on each Saturday will be a session in which new material is covered by the instructor and the class. The afternoon session will be modeled on Lesson Study. Groups of students will present a lesson and the other students will observe. The class will then look at what happened in the presentation of the material and discuss the opportunities for learning and misunderstanding.

Teachers in this class will receive renewal credits, postgraduate or graduate credit, depending on what they desire, are willing to pay for and what they need.