CROSSROADS TO CLASSROOM

A FACULTY DEVELOPMENT OPPORTUNITY FOR NCMATYC MEMBERS - 2001-2002

PRESENTATION OUTLINE

- Crossroads to Classroom Project Plans
- Participant Requirements
- Lesson Template
- Project Outcomes
- Participants and Lessons Developed
- Try an Activity
- Participant Evaluation

PROJECT PLANS

- At the 2000 summer retreat of the NCMATYC Board, the concept was born.
- A committee of four was formed to guide the direction of the project.
- The AMATYC Traveling Workshop was contact to research potential workshop topics.
- AMATYC Traveling Workshop Crossroads topics are:
  - Assessing student learning,
  - Meshing teaching and learning styles,
  - Program evaluation,
  - Collaborative learning,
  - Problem solving, and
  - Others
- The one-day workshop was planned for the first day of the NCMATYC Conference.
- A "*Call for Participants*" went out to every member requesting participation for up to twenty members.
- Nineteen registrations were received.
- Cheryl Cleaves appointed to conduct the AMATYC Traveling Workshop
- Four content areas of focus were decided upon
  - Teaching Problem Solving
  - Using Group Methods
  - Meshing Teaching and Learning Styles
  - Developing Curricula
- One month prior to the workshop, the following materials were sent to each participant
  - A timeline for the project
  - A format for materials to be developed
  - Suggested reading on topics to be discussed at the workshop
  - The AMATYC Standards Document

- The requirements of each participant to receive the stipend from NCMATYC

PARTICIPANT REQUIREMENTS

- Complete the preliminary reading and participate in the workshop on 3/22
- Write six lessons per pair of participants (or three each) that utilize the *Crossroads Standards* and that follow the provided format
- Submit the first draft of all lessons by August
- Director evaluated the first drafts and returned them by the start of fall semester
- Field test the lessons in classrooms during the fall semester
- Make improvements on each lesson based on field-testing and the evaluations
- Submit the final lessons prior to the NCMATYC Conference in March
- Conduct a presentation at the NCMATYC Conference related to the lessons written

ACTIVITY FORMAT

- ***EACH LESSON CONTAINS***
  - Student Sheet
  - Teacher Sheet
  - Needed Worksheets
  - Solution Sheet
- ***STUDENT SHEET FORMAT***
  - Topic
  - Introduction to the lesson
  - Materials needed
  - Student procedure
  - Extension/Report
  - Handouts
- ***TEACHER SHEET FORMAT***
  - Course and Math Topic
  - Intellectual Developmental Standards
  - Pedagogy Standards
  - Goals and Objectives
  - Procedure Hints to the teacher
  - Grading Rubric as needed
- ***SOLUTION SHEET FORMAT***
  - Solutions to all student work in the same format as the student sheets

PROJECT OUTCOMES

- Lessons shared at the NCMATYC conference where 150 were in attendance
- Lessons made available on the NCMATYC Web-site
- A CD was produced and distributed to every community college in NC
- A booklet of the project lessons was presented to each participant at the NCMATYC business meeting

- Professional growth for each participant

PROJECT PARTICIPANT LIST WITH THEIR LESSON TITLES AND INCLUDED TOPICS

NENA BABB CATAWBA VALLEY C.C.

LESSON TITLES

- How much does it hold?
- Modeling Quality Control
- Redecorating Your Room

MATH TOPICS

- Volumes of 3-Dimensional Figures
- Probability, Estimation, Percentages, Mean, Fractions
- Estimation, Applying Formulas, Area, Perimeter, Scale Drawing

JAY MARTIN WAKE TECHNICAL C.C.

LESSON TITLES

- Graphical Properties of Polynomials Jigsaw
- Modeling Rivers from Topographical Maps
- Earning and Saving Money

MATH TOPICS

- Shapes, # of x-intercepts, turning points, end behavior, y-intercept for 3rd, 4th, and 5th degrees
- Polynomial Regression (or matrices) and Graphing Difference Quotients
- Sequences and Series Apps Solved Numerically, Graphically, Symbolically

JAN MAYS GUILFORD TECHNICAL C.C.

LESSON TITLES

- That's the Way the Ball Bounces
- Building Boxes
- Circles, Midpoints, and Distance Jigsaw
- Expected Life Span
- Applying Transformation

MATH TOPICS

- Linear Functions, Slope, and Data Collection
- Graphing Polynomial Functions, Maximums and Minimums
- Circle Equation, Midpoint and Distance Formula, and Cooperative Learning
- Functions, Modeling, Regression
- Transformations of Functions and Exploration

MICHAEL MILLER WAKE TECHNCAL C.C.

LESSON TITLES

- Polynomial Curve Fitting
- Path of a Space Shuttle
- Generating Exponential Functions by Pattern Recognition

MATH TOPICS

- Using matrices to find polynomials and calculating residuals to determine best model
- Generating Data and Modeling Data with a trig function
- Generating tables of values and recognizing patterns to write exponential models

PHYLLIS PATTERSON WAYNE COMMUNITY C.

LESSON TITLES

- Discovering Parametric Equations
- Advantages of Parametric over Rectangular
- Transformation of Functions

MATH TOPICS

- An Introduction to Parametric Equation Graphing
- Converting from Parametric to and from Rectangular and Projectile Motion
- Transformation of functions and Exploration

LINDA SIGMON CATAWBA VALLEY C.C.

LESSON TITLES

- Graphical Investigation of the Sine Function
- Graphing Table: Guess and Test
- Biorhythms

MATH TOPICS

- Graphing Sine and Cosine using the 5 main points to analyze transformations
- Analysis of the effects of different coefficients A, B, C, and D on trig functions
- Periodic Behavior, Modeling with Trig Functions, and Predicting Outcomes

SHARON WELKER CATAWBA VALLEY C.C.

LESSON TITLES

- The Southern State Lottery
- Transformations
- Algebra and Anything?

MATH TOPICS

- Compound Interest, Future Amount, Expected Value, Probability
- Function Graphs, Transformations, and Learning Styles
- Algebra and any other topic of student interest, and Internet Research

PEGGY WOMBLE WAYNE COMMUNITY C.

LESSON TITLES

- Modeling Population from Census Data
- Conic Sections throughout Nature
- Exploring Functions through Parametric Equations

MATH TOPICS

- Scatter Plots, Modeling with Polynomial Regression
- Conic Sections, Research, and Report Writing
- Parametric Equations and Projectile Motion

TRY AN ACTIVITY

- Go to the NCMATYC web-site www.waketech.edu/ncmatyc/ and then access Instructional Resourses and try a few activities listed under the Crossroads to Classroom Project

PARTICIPANT COMMENTS

What was the reason you registered for the *Crossroads to Classroom* Project?

- *I was interested in developing some activities for Math 140.*
- *I wanted to help construct some classroom materials for subjects we teach.*
- *I want to develop a database of classroom activities assessable to all teachers in NC.*
- *What was the reason you registered for the **Crossroads to Classroom** Project?*
- *I am always looking for ways to reach more of my students.*
- *I wanted to work with another instructor on developing activities.*
- *I want to support a project that would share good creative classroom activities.*
- *What was the reason you registered for the **Crossroads to Classroom** Project?*
- *It is an opportunity to acquire new ideas that I could use to enrich my instruction and offer meaningful lab work in Math 175.*
- *I thought the project would provide a structure for studying and implementing the STANDARDS.*
- *I wanted a "human being" to interpret the STANDARDS for me.*
- *Anything to help my classes improve is appreciated.*
- *A wide available database of activities would be a tremendous benefit to NC instructors.*
- *It seem liked an excellent idea that was going begging for participants.*

Are you in favor of *NCMATYC* sponsoring a similar project in the future? Why?

- Yes. It gives an opportunity to grow and learn among participants, and provides stimulating material for others to use.

- Yes. This project should be followed up with faculty involvement with the NSF grant "Back to Industry" that Wake Technical C.C. runs.
- Yes. It is important for good teachers to share good ideas.
- Yes. I believe that is could be a way to get instructors to implement what they see at sessions.
- Yes. It was refreshing to see concrete examples of what the STANDRADS mean.
- Yes. Developing three labs was more time-consuming than I expected. This project will allow other time-deprived instructors to consider the STANDARDS and incorporate new activities that they might not otherwise take time to create.
- Yes. New ideas always help.
- Yes. Anything that opens communication and the exchange of ideas and techniques is good for us.
- Yes. However, more time is needed during the workshop for teams to focus on ideas for activities.

PARTICIPANT COMMENTS

- The Project certainly caused me to re-examine what I do in the classroom and work to make it more engaging to the students.
- It was a worthwhile project. The standardize format was good, and having sample labs was very helpful.
- Seeing the results of others, work presented at the conference was a positive outcome of the project.
- A second meeting of all participants as a working session to share ideas before the lesson deadline would have been helpful.

CROSSROADS TO CLASSROOM
A LOOK TO THE FUTURE?

I encourage each state affiliate to conduct such a project. This could lead to an AMATYC activity database supporting the ***CROSSROADS.*** Please contact me at the address below if you plan to pursue such a project, either state wide or within your area or school.

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