

NCMATYC NEWS

Spring 2006



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The President's Message

**By Jan Mays
Elon University**

Another conference is behind us and what a great conference it was! We experienced the highest attendance of any conference in recent memory and had lots of opportunities to share experiences. Rob Kimball and the folks at Wake Tech did a wonderful job coordinating the conference activities and making all of us feel welcome. Dr. Bill Thomas, our keynote speaker, livened up our lunch with some challenging problems to ponder. I wish to thank historian Mike Schachter for the interesting display of photos from former conferences and taking pictures to document our most recent conference. My thanks also go out to the presenters who volunteered their time and expertise, the vendors who supported the conference with their presence and their donations, and all of you who attended and participated in discussions during sessions and around dinner tables in the evening.

As in all even numbered years, this year there will be changes in the NCMATYC board. I have enjoyed working with Chuck Wessell, Sharon Killian, Ann DeBoever, and Mary Marsha Cupitt who are completing their terms of office this year. Your hard work and dedication to NCMATYC is appreciated.

As the incoming board meets in May, we will begin charting the course for the future of NCMATYC. If you have ideas, questions, or concerns that you would like the board to address, please feel free to contact me or any board member. We value your input and support.

The NCMATYC NEWS is an official publication of the North Carolina Mathematics Association of Two-Year Colleges. Articles for publication and comments should be submitted electronically to helen.kolman@cpcc.edu. The deadline for the Fall 2006 issue is September 1, 2006.



Hosting a State Conference

By Rob Kimball
Wake Tech CC

If you have ever hosted a state conference, or any conference for that matter, you know it is a labor of love – love for the profession and for the people who attend .

The 2006 NCMATYC State Conference was no exception. The WT team attempted to dot every *i* and cross every *t* so that your conference experience was enjoyable, comfortable, and stimulating. Along with the WT team, I worked with Chuckie and Jan to find speakers and create sessions that met the needs of this diverse membership.

The conference is one thing that NCMATYC does for members – but relies on members to make it happen! Let me suggest that you, the member, can help make future conferences even better.

1. Register early. Put next year's conference on your calendar and don't wait until the last minute to register. The planning is much easier if the planners know what to expect attendance-wise.
2. Consider presenting. The conference offers several different types of sessions from which you may choose: short sessions that are course or topic-oriented, regular sessions, and workshops. Find a colleague and do it together – find several colleagues and make up your own set of short sessions on your topic of interest. But, whatever you do, do it early – before Christmas.
3. Suggest presenters. There will always be “hot” topics that need to be in the program; assessment (classroom, course, program), technology, and content. If the programs haven't had as much on a certain topic as you'd like – find someone to change that!
4. Be considerate. If you're going to attend the conference, make full use of the work that so many put into making the conference something beneficial for you. Attend the sessions and contribute.

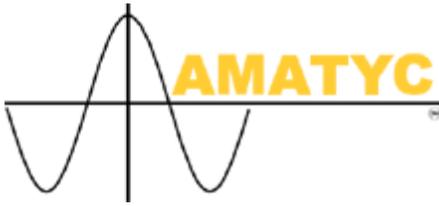
See you all in Charlotte next March.



A Note From the Next NCMATYC Conference Host

by Helen Kolman
Central Piedmont CC

We, the faculty at CPCC, thank Rob Kimball and the team at Wake Tech for hosting a great spring conference. The bar has been set and we will do our best to make your experience in Charlotte as pleasant and rewarding as the 2006 NCMATYC Conference was for all who attended. We hope you are planning to attend the 2007 conference and we ask you to consider sharing something that is working for you in your classroom with the rest of us by presenting next spring.



AMATYC Update

by *Rob Kimball*
AMATYC Southeast Vice-President

In November, I began my third term as your regional Vice President. Let me take this opportunity to thank you for your help and support. Members from our region have always played major roles in the organization. This is due, at least in part, to the strong affiliates we have but also to your dedication to our profession.

This fall, the 2006 AMATYC Annual Conference will be held in Cincinnati, Ohio. The conference mini program, including registration materials, will be out in late summer. I hope to see you all in Cincinnati in November. Next fall, 2007, the conference returns to the southeast region – New Orleans. Orlando was a great conference and we know New Orleans will be as well, even with all the hurdles that have been and will be overcome.

One of the highlights of the Cincinnati conference will be the roll-out of *Beyond Crossroads* – the document and the electronic resources. All conference attendees will receive their copy of the document in Cincinnati. Special conference activities and sessions related to *Beyond Crossroads* are being planned. One activity is a Friday evening celebration at the Freedom Center, a museum dedicated to the Underground Railroad.

Project ACCESS (Advancing Community College Careers: Education, Scholarship, and Service) will be looking for fellows for its third cohort. The deadline for applications is July 1, 2006. This is a great program for new faculty and is helping to build the future of our organization. I hope you'll encourage qualified candidates to apply.

I would also encourage you to get together with a non-math colleague and apply to be part of AMATYC's Mathematics Across the Community College Curriculum (MAC³). The summer institute will be held in August in Leavenworth, Washington. The facilitators are great, the setting is restful, and the food is amazing. Another institute will be held early next year in Florida. The project is funded by an NSF grant.

AMATYC is also in the process of accepting nominations for its Teaching Excellence Award. In the past, the awards were given out by region. Starting with this nomination cycle, a maximum of eight awards will be given out nationally. In the last cycle, Virginia W. Parks from Georgia Perimeter College was the regional awardee.

You might also consider nominating yourself or a colleague for the AMATYC Executive Board. Nominations are being accepted for the position of: President-Elect, Secretary, Treasurer, and Southeast Regional Vice President. If you have questions about the responsibilities for any of the positions, please contact me. More information on how to make a nomination or about any of the projects and awards I mentioned can be found at the AMATYC web site, www.amatyc.org.

I have enjoyed working on your behalf as VP. If you have questions related to anything AMATYC, please contact me at rob_kimball@waketech.edu.



The Newly Elected NCMATYC Board

All photos taken at the March NCMATYC Conference by Mike Schachter

From the Eastern Region Vice President

by Phyllis Patterson
Wayne CC

Another academic year has come and is almost gone. Where did the time go? I know my time has been filled with teaching many classes and working diligently with students and with NCMATYC. Speaking of NCMATYC, we need you to be actively involved. Our professional organization needs help from its membership. NCMATYC is only as strong as the strength that each of you provide. Some of the strength comes from our campus reps. If your campus does not have a rep, please contact your new regional VP and volunteer for the job. We hope to be able to utilize our reps more in the future. Another strength comes from those members who lead sessions at our spring conferences. Thanks to the many presenters from this and past years' conferences and an early thanks to those of you who will be presenters for the 2007 conference in Charlotte. Additional strength comes from those who write articles for the newsletter. Strength also comes from your NCMATYC board. Please contact your officers and let them know what is important to you and what we can do to help make NCMATYC a more viable organization. Finally, the membership is our strength. To paraphrase President John F. Kennedy: Ask not what NCMATYC can do for you; ask what YOU can do for NCMATYC.



CALLING EASTERN REGION CAMPUS REPS

by Phyllis Patterson
Wayne CC

Thanks to all of the members who have agreed to be campus reps for the Eastern Region. Please take a look at the list and if your school does not have a rep, please volunteer. Also, if I missed someone or if your rep is no longer at your school, please let me know. In order for campus reps to be viable, ALL schools need a REP.
Eastern Region Campus Reps:

Bladen:

Brunswick: Helen Sexton

Cape Fear: Jonathan Shands

Carteret:

Coastal Beaufort: Kimberly Mullis

Carolina: Kelly Richardson

College of the Albemarle:

Craven:

Edgecombe:

Halifax: Chuckie Hairston

James Sprunt:

Johnston:

Lenoir:

Martin: Don Schork

Nash: Jane Seeger

Pamlico:

Pitt: Glynis Mullins

Roanoke Chowan

Vance Granville: Rene Thompson

Wake Tech: Sharon Welker

Wayne: Peggy Womble

Wilson Tech: Jimmy Bullock

What's Working In The Classroom?

Want to Put Excitement into Your Classroom? Make It Real!

By Jo-Ann G. Williams
Wake Technical CC

Life is easier when we take our problems from another textbook or make up data that suits our purpose. We don't have time to research and create. We don't want to work with messy data – and life is full of messy data. We are not comfortable with the unknown. We want structure. We want efficiency. We want to be safe.

If you want true exhilaration in your classroom, try stepping out of your comfort zone. Begin basing your content on real relevant data.

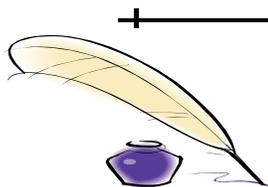
The thrill of working with real relevant data is contagious. Last semester, Cyrus McCarter kept finding real data sets on the internet to analyze for each function we were covering. Our lively discussions infected all around us. The College Algebra committee meetings were an energetic interaction of sharing new sites, new data, and new methods of delivery. The infection of “making it real” truly gave inspiration to College Algebra. There were so many stimulating conversations starting with, “Come here, look at what I found!”

This enthusiasm spilled over into creating materials for classroom discussions, test questions, and assignments based on data collected from newspapers, periodicals, ads from many sources, and the internet. Sharon Welker introduced the idea of having Brief Calculus students looking up Gini Index and Lorenz Curves on the internet before we began teaching it. Then students would see the importance as well as have at least a minimal understanding before we started.

The students began to see the relevance of what we were doing. They began to not only find but also bring in data on their own. One of my College Algebra students came running into my classroom wishing to share her experience at Gold's Gym. She explained, “They had two plans. The first was \$99 initial investment with \$47.99 per month and the second was \$249 initial investment with \$37.99 per month. I told them I needed a pencil and paper to figure out which was best for me.” A history major in Nancy Rivers' Survey of Mathematics class had such enthusiasm for his researched tuberculosis data that he spawned exciting classroom discussion among his fellow students. In a reflection paper about a data collection project write-up, a College Algebra student wrote, “Also I liked how one gets to use real data and see how exponential forms relate to the data.”

One day two of my students shared, “You did not write that worksheet we did last night. The problems were not realistic.” I was thrilled. The students are discerning. The students want relevance. The real data out there is more exciting than anything we can conjure up. Just try it. You may like it. I can assure you that your students will.

For examples of prepared classroom materials from real relevant data, email jgwilliams@waketech.edu or go the www.cgc.edu/frankwilson/conference.



A Note from Your Editor

by Helen Kolman Central Piedmont CC

As my first year as editor draws to a close, I would like to thank everyone here at CPCC who helped with the administrative tasks involved in putting out the newsletter. In addition, I would like to extend a special thank you to Laura Tucker who proof read all editions. I truly appreciate your willing assistance.

**Math Across the Curriculum:
An Application in Government Spending**

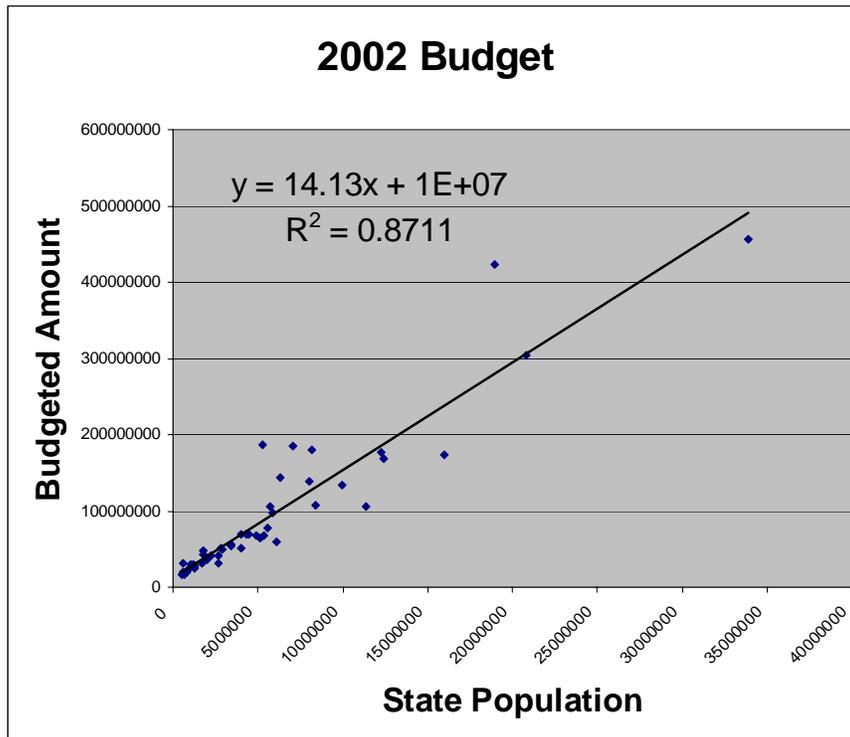
**By Nancy Rivers
Wake Technical CC**

Each year, the Center for Disease Control (CDC) publishes the annual *State Health Profiles*. This publication includes an accounting of funds spent in each of the fifty states and the District of Columbia. The *2003 State Health Profiles* can be accessed at the following URL:

<http://www.cdc.gov/epo/shp/pdf/SHP2003.pdf>

Among the information included in this document are the totals of the CDC funds budgeted for each state and each state's population in 2003.

I theorized it would be "fair" if the money budgeted for each state was proportional to the state's population. In fact, I expected to see that the amount budgeted per person was virtually the same from one state to the next. An examination of the data when graphed on Excel (state population on the horizontal and amount budgeted for that state on the vertical) quickly disproved my theory.



Excel can also be utilized to further examine the data. A computation of the per capita budget for each state can be quickly done on Excel. Excel can also be used to sort the data by state population, by the amount budgeted, and by the per capita budgeted for each state. It can easily be determined that Alaska was budgeted significantly more per capita than any other state. Why would this be? I don't know. Perhaps this is where a course in economics, government, or business could delve further into the CDC budget process.

I have developed a lesson plan for whole class exploration of this data set and its linear regression model. I would be happy to share the lesson plan and my Excel file containing the data to anyone interested. My email address is njrivers@waketech.edu.



Articles From the NCMATYC Annual Conference

March 2006 Raleigh, NC

Comments on NCMATYC 2006

Submitted by Valerie Melvin:

When I attend conferences, I specifically look for sessions that will provide me with ideas and materials to immediately use in class. At the 2006 NCMATYC conference I was excited to participate in numerous sessions that did just that. Frank Wilson's session entitled *When Am I Ever Going To Use This? 10 Real-Life Applications* was engaging and informative. Mr. Wilson provided the participants with ten real world classroom activities ranging from *An Investigation of Errors in Advertising* to *How Much Car Can You Afford*. Frank also shared with us several interactive computer "games" which allow students to have fun while learning or reviewing. The material Mr. Wilson provided at the conference can be freely downloaded from www.cgc.edu/frankwilson/conference.

I also attended Deborah Benton and Lisa Hodge's session entitled *Using Excel In College Algebra and Brief Calculus*. We worked through some basic Excel functions and graphs in context with application problems. Whether you were an experienced user or novice of Excel, this session provided you with information on incorporating the technology or expanding your current uses.

Finally, congratulations to the program director. It was wonderful to see that the only available sessions from 2:15 – 3:00 Thursday were Crossroads sessions. I had the pleasure of reading the entire document on the flight back from AMATYC. I am excited about the ramifications of this project and look forward to the implementation of Crossroads standards throughout the state. Thanks to Wake Tech for hosting a quality conference, something we've grown to expect from your dedicated faculty.



Submitted by James Walters:



On March 9 and 10, I attended the annual NCMATYC in Raleigh, NC. Most of the sessions I attended were for calculus using Maple. In the calculus sessions, we were presented different ideas for making calculus more real for the students. One interesting idea was to have the students do a "calculus portfolio". This is something I am considering implementing in the fall. In the Maple sessions, I learned how to use Maple in the lab for various calculus topics. Handouts were also provided which I have been able to use immediately and plan to use in the future.

NCMATYC Articles continued:

Submitted by Denise M. Wetli

Physics Instructor Wake Technical Community College

Conveniently, as a member of the MAT/PHY department of the host institution, the 2006 NCMATYC Spring Conference was an opportunity easy to take advantage of. The good variety of sessions played to some very common issues between math and science teaching and learning. The sessions on distance education, technology, and assessment were the ones that I gravitated to. I especially found session 21: Closing the Loop by Mary Pearce & Sharon Welker very helpful. My past efforts at assessment in physics have generally not provided useful information in my opinion. This session gave me confidence in creating more focused learning outcomes and analyzing them in a more meaningful way. Also, session 42: Beyond Crossroads – Assessment of Student Learning was a perfect match after lunch. I plan to seek help from my physics colleagues at our upcoming spring NCS-AAPT meeting to discuss learning outcomes for physics. I feel this will be very useful as we strive for quality and equity in our courses, whether they are live, hybrid, or delivered at a distance. Thanks for providing the leadership with your Crossroads efforts. NCMATYC's focus on students makes them the ultimate winners in this process.

Learning Objectives and Closing the Loop

Presented by Mary Pearce and Sharon Welker Wake Technical CC

A Reflection by the Workshop Coordinators

At the 2006 NCMATYC conference held at Wake Technical Community College the authors of this article coordinated a workshop on Learning Objectives. The group was small and diverse allowing for the sharing of valuable information. The workshop focused on assessment at the course level.

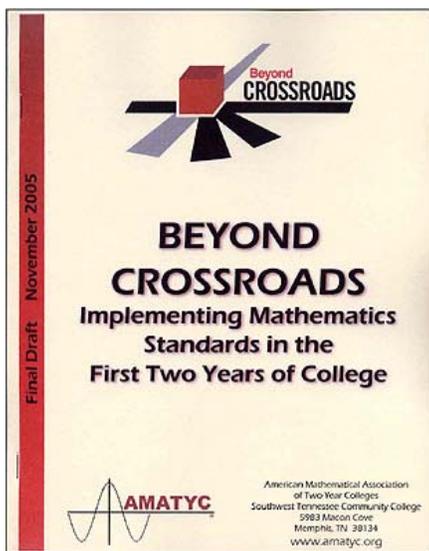
Beyond Crossroads emphasizes that a course assessment is used to gain a broad picture of student learning. It is not to be used to evaluate individual instructors. The AMATYC six-step assessment cycle is to define/refine; design; implement; collect/analyze/evaluate the data; identify needed changes; and document the results. As the cycle is repeated, our goal is to improve student learning in the mathematics course. To start the process a valuable resource is AMATYC's 1995 *Crossroads in Mathematics: Standards for Introductory College Mathematics Before Calculus*. Using the standards in *Crossroads*, along with course descriptions and competencies, will facilitate the creating of a quality course assessment document. All faculty teaching a particular course should decide on the learning objectives for the course which promote the skills and concepts that the faculty agree are most important. After defining the objectives, appropriate assessment items need to be designed and implemented. The process, when done with a team of faculty, promotes valuable discussion and the rewards go far beyond the assessment document that is created.

According to *Beyond Crossroads* the objectives and assessment items should remain fairly consistent over a short period of time. Consistency allows for comparison to previous results provided data collection includes a useful summary of results. The faculty teaching the course then reflect upon the results of the learning objectives, the class materials, and processes used to teach a given concept. The results may indicate that more time should be spent on some topics and less on others. They may indicate that alternative methods need to be created to help students learn more difficult topics. Sometimes the faculty may decide on changes to the assessment item. The sharing of best practices in a supportive and collegial atmosphere leads to improvements in the student learning, and professional growth for faculty.

Continued on Page 9

The discussion at the workshop led to the following ideas for creating successful assessment plans.

- Even if departmental tests are not being used, faculty teaching the same course could agree on one or two common questions per test and several common questions on the Final Exam to evaluate the course.
- Every question on every test does not need to be evaluated.
- A reasonable number of learning objectives for a course is between 8 and 15.
- Visual (graphs and tables) analysis and notes comparing results between semesters is important to the process.
- Soft skills like collaborative learning can be measured using student surveys.
- The results of course assessment should be used by individual instructors to improve at the class level, but should not be used in the instructor evaluation process.



BEYOND CROSSROADS

“Beyond Crossroads”, the Mathematics Standards document of the AMATYC, was investigated at the March NCMATYC conference in five simultaneous workshops led by members of the Central Piedmont Community College Faculty and attended by Math Faculty from community colleges across the state. Lively discussions were held and innovative ideas concerning strategies to implement the standards were devised by members of the groups. The following reports were prepared by the CPCC team.

Curriculum and Program Development

by Larry Tramer

The Crossroads session on Curriculum started with a power point presentation of the main highlights of the document. The discussion which ensued was mainly focused on two issues.

The first of these concerned how instructors are to complete all the curricular recommendations within the already too short class time frame. Many felt that they barely get through required content already, and trying to promote any additional agenda via existing course work is simply not realistic. Some suggested that by adding lab hours to existing courses, instructors could then take on the additional curricular issues deemed to be important by the Crossroads document.

The other point of concern was the use of technology in classes. Some felt that using as much technology as possible was the best overall curricular strategy (MAPLE, TI-89), others felt that we need to move away from technology and return to the standard curriculum. It was clear to the presenter that there is still a lot of work to be done in determining a role for technology which will satisfy the majority of mathematics faculty.

The recommended implementation standard is - **Faculty at their institutions will create an environment that optimizes the learning of math for all students.**

This area has six focus points and each was discussed by a group of faculty who came up with multiple strategies to address implementation. A few are listed below:

- **Initial Placement** – Find a better diagnostic tool to use in initial placement / Use multiple measures.
- **Responding to the Needs of a Diverse Population** – Capitalize on Peer Tutors – particularly skilled bilingual students to assist students whose mathematical development is hampered by language issues.
- **Learning Styles** – Provide faculty with workshops on learning styles and release time to develop course resources that address a variety of learning styles.
- **Learning to be Problem Solvers** – Provide students with exercises that encourage logical thinking in a comfortable environment that allows time to develop problem solving skills
- **Math Anxiety** – Teach with meaning / Make math fun / Provide extra worksheets for practice/ Ease testing stress by putting a cartoon on the test.
- **Inside and Outside the Math Classroom** - Provide course specific study centers.

Assessment of Student Learning

by Cindy Fowler and Laura Tucker

Assessment is a comprehensive process with many facets. It is an on-going process that occurs at the classroom, course and program level. Faculty will use results from the ongoing assessment of student learning in mathematics to improve curricula, materials, and teaching methods.

A good cross-section of schools was represented at this session. Faculty members from colleges such as Wake Tech, Coastal Carolina, Beaufort, Pitt, and Durham Tech shared ways in which they already are or potentially could implement faculty actions to support the following implementation recommendations.

Classroom Assessment

Implementation recommendation: Each faculty member will use classroom assessment techniques as an integral part of instruction to identify learning deficiencies and adjust instructional methods and materials.

Suggestions: In addition to traditional written tests and quizzes, labs, projects, portfolios, group work, conferences, minute papers and journals were suggested. Peer to peer evaluations, student course evaluations and course level committee meetings were also mentioned.

Course Assessment

Implementation recommendation: Mathematics departments will determine outcomes for each course and measure student learning for all students enrolled, relative to these outcomes.

Suggestions: Common course written evaluations were mentioned. All tests and quizzes across a course could be common, or common course questions could appear on individual tests and the final exam. Student tracking from one course to another and having a lead instructor per course were other suggestions.

Program Assessment

Implementation recommendation: Mathematics faculty, in collaboration with faculty in other departments, will design an assessment process to measure and improve student learning of mathematics and quantitative literacy in all academic programs.

Suggestions: The development of an interdisciplinary capstone project was discussed.

Instructional Strategies –

by Rudy Johnson

Helping students learn how to be life-long learners through Cooperative Learning.

As instructors we primarily define what topics are important for students. However, we also know that students are not all alike and how they perceive information is determined by the student's individual learning style. Students have natural learning strengths that make sense to them as individuals. Knowing this, instructors must use a variety of teaching strategies that will help students learn using their individual learning style.

To be effective instructors must provide a learning atmosphere that engages all students. Learning is not a spectator event. Students must be actively involved in the learning process. At Central Piedmont Community College in addition to teaching math, some instructors have instituted "***Lunch and Learn Days***". Instead of lecture, the instructor provides time for open discussion where students have the opportunity to talk about real issues and concerns they have about math. During these forums a light snack is provided and students discuss openly how they have processed the topics that have been taught.

The instructor can interact on a more personal level with the students and find out "individual" learning styles. Some students participating in ***Lunch and Learn Days*** said that they feel as if the instructor really cared about them as well as they felt a sense of respect from the instructor. Breaking down barriers can promote life-long learning.

Creating a community of learners can also be effective. In the community environment students with their individual and unique learning styles learn together. In the Spring of 2006, the math department at Central Piedmont Community College established the ***MAT070 and MAT080 Accountability Partners Enterprise***. This enterprise incorporates a community within a community designed to accommodate both traditional Learning Community Students and non Learning Community Students at CPCC. Students from MAT070 were assigned accountability partners in MAT080. The instructors created projects and activities that linked the skills of both classes. Class time was provided so that Accountability Partners could come together and work on the assignments. As a result of this alliance MAT070 students were able to gain confidence in the skills they were learning as well as receiving a "heads-up" to what they can expect at the next level. MAT080 students also gained confidence in their learned skills and had the opportunity to "use immediately" what they have learned to help someone else. As a team, students appreciated and validated their learning of math at two different levels. The instructor and students became co-producers in the learning process.

Learning must be engaging and meaningful to the students regardless of their learning styles. Instructors must make themselves aware of individual learning strengths and weaknesses and deliberately seek out a variety of methods to reach the students. By doing so, students can become true life-long learners and use what they have learned to be effective in their chosen careers.



2006 – 2008 NCMATYC Leadership

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