

PMET Mini-Grant – 2005-2007

Tri-State Teachers of Mathematics Network

The University of Wisconsin-Platteville mathematics department was awarded a PMET mini-grant to help fund a new direction for the objectives of the Tri-state Teachers of Mathematics Network. The funding for this mini-grant began in the spring of 2005 and will be completed in the fall of 2007.

History

The University of Wisconsin-Platteville (UWP) is located in southwest Wisconsin, twenty miles from both the Iowa and Illinois borders. The university is in a rural area where within a 60-mile radius approximately 50 middle schools and high schools exist. The majority of these schools are in small communities. The mathematics faculty of these schools consists of only one or two individuals. These individuals are isolated and few opportunities exist to discuss mathematical issues. UWP is the only public four-year institution of higher education within this radius.

The UWP mathematics department identified the need for some connection between these individuals to exist. In 2000, the department was awarded a small university grant to create a network that connected math educators with other math educators in the area. The idea for the existence of this group comes from the MAA's Project NExT. This group is called the Tri-state Teachers of Mathematics (TTM).

The TTM group meets once a semester and all participants have the option to belong to an email list serve. The list serve is similar to the MAA Project NExT program. The topic of each meeting is related to an area of concern in mathematics education to the participants in the group. A typical meeting has a speaker, time for discussion and dinner. The dinner allows time for the individuals to network with others, share ideas and form connections with other teachers in the area. Topics of these meetings have ranged from the use of technology in the mathematics classroom to integrating probability into the geometry curriculum to the federal program of "No Child Left Behind".

After four years the group has over one hundred members on its list serve and approximately 50 to 60 individuals attend the meetings each semester. The list serve has grown to include faculty from private colleges (Loras College, Clarke College and the University of Dubuque) and community colleges (Southwest Wisconsin Technical College and Highland Community College) in the area. Preservice mathematics teachers are also invited to attend the semester meetings.

The university grant used to initiate this network lasted only a year. The mathematics department has since taken the responsibility of providing the financial support for this group. The department saw that it had opened lines of communication between mathematics educators in the tri-state area. Valuable information has been shared among the members of the network. Collaboration between the UWP mathematics faculty and the tri-state mathematics teachers has also improved. All these reasons justified the department's support.

Problem and Planned Solution

A weakness of the TTM network was that it did not have a focus or a direction. The participants in the TTM suggested the topics covered at past meetings. The topics had been interesting and timely but there was no continuity between the themes of these meetings.

Course of Action

The mini-grant was used to direct the focus of the TTM group. The MET document was used to provide that focus. The change occurred by modifying the goals and objectives for the group.

Revised Goals of TTM Network

- The network wants to develop more successful beginning teachers, facilitate the ongoing professional growth of all participants, and create a school environment where questioning, experimentation and reflection are ongoing and valued professional practices.
- Encourage more mathematicians (in the middle schools, high schools and postsecondary institutions) in the tri-state area to become more involved in K-12 mathematics education.
- Develop a partnership with middle school, high school and college faculty in the tri-state area to speak as one voice to advocate the new mathematical standard for prospective teachers.

Revised Objectives of TTM Network

- Provide a medium where teacher candidates have the opportunity to form contacts and discuss mathematics and pedagogical issues with teachers currently in the field.
- Provide speakers who deliver meaningful professional development activities for in-service teachers, school administrators and college faculty.
- Allow participants from postsecondary institutions the opportunity to discuss the redesign of mathematics courses for teachers with experienced educators already in the field.

The funding from the mini-grant was used to compensate invited speakers and fund supplies for each of the meetings. These supplies provided paper and copying costs, dinner for participants, and postage on the letters for the invitations to the schools. All money received from the grant went to the support of the TTM network. None of the grant money was used to compensate for the time volunteered by members of the UWP mathematics department to help organize or arrange the meetings.

Implementation of PMET Mini-grant

The UWP mathematics department implemented the PMET mini-grant by continuing the discussions previously held with mathematics educators in the tri-state area with the revised objectives providing a direction for each meeting. Special efforts were made to encourage the preservice teachers to attend and network with other participants and discuss topics pertinent to

mathematics education. At each meeting questionnaires were also handed out to all participants asking for input on how best to prepare teacher candidates for the mathematics classroom.

Our department held three of these discussions with a fourth meeting planned for the fall of 2006. Attendance at each meeting was good with approximately 50-60 attendees. Each invited speaker covered a specific topic based off of the Nation Council of Teachers of Mathematics principles and standards document. The topics involved the principles of mathematics education technology, teaching, and assessment. The planned fourth topic for the fall of 2006 will cover reflection on teaching.

The speaker for the technology discussion was Dr. Eric Knuth, an associate professor in mathematics education at UW-Madison. His presentation was entitled "Teaching Mathematics with Technology". His focus was on ways to utilize technology in enhancing a students' understanding of middle and high school mathematics.

The speaker for the teaching topic was Dr. Carolyn Hoppe, an emeritus professor of mathematics education at UW-Eau Claire. The title of her talk will be "The Courage to Teach: You Can Make a Difference". Her talk involved the importance of teachers deeply understanding the mathematics they are teaching and being committed to their students not just as learners of mathematics but also as human beings.

The assessment speaker was Dr. Margaret Meyer, a researcher for the Wisconsin Center for Education. The topic of her talk was "A Model for Assessment in School Mathematics". Her presentation involved creating assessment tools that would measure various levels of thinking. She also discussed the use of rubrics to evaluate the effectiveness of these tools.

Each speaker did an excellent job of informing the participants on the various topics. Their talks created discussion among the participants and left everyone with ideas to use or to think about. Each speaker also stressed the importance that all mathematics teachers possess a deep understanding of mathematics, a habit of mind of a mathematical thinker and a common sense needed in problem solving.

The fourth meeting will be held after the deadline for this summary of the PMET grant. It will be presented by Alan Hackbarth and Marge Wilsman, both from UW-Madison. They will discuss using new methods in which to preplan lessons and reflect on the teaching of mathematics.

Meeting the Components of the PMET Mini-grant Requirements

The requirements for the PMET mini-grant were to improve mathematics courses for teachers, engage faculty and network with others interested in teacher education. The UWP mathematics department satisfied these requirements in the following ways:

Improve Mathematics Courses for Teachers

The TTM network consists of postsecondary instructors, middle school and high school teachers, school administrators and preservice teachers. The information shared through discussions among participants was used to enhance current courses offered at UW-

Platteville. High school and middle school educators were able to share insights from the classroom and had an input in the topics discussed offered to courses involving preservice teachers. Topics covered at the meetings provided for mini-professional development activities for the participants. Possibly most important, preservice teachers had the opportunity to discuss with practicing teachers the importance of a quality mathematical background.

Engage Other Faculty

The motivation from the beginning for the TTM network has been to provide activities and discussions that engage participants in areas of interest in the teaching of mathematics. With the help from the PMET grant, the focus of topics was adjusted to address important issues in mathematics education. Each speaker demonstrated the need for a quality mathematical background for preservice teachers.

Network

The mini-grant director and the mathematics faculty of UW-Platteville would be excited to share ideas with other institutions interested in the education of teachers.

The foundations of the TTM network had already been initiated before being awarded the PMET mini-grant. It has a strong core of participants interested in teaching mathematics. The grant was not used to establish the network but rather to focus the attention of the participants on the importance of teacher education.

Evaluation of Accomplishing PMET Mini-Grant Components

Participant Evaluation

Evaluation sheets returned by participants agreed that the meetings are a good experience for everyone. Participant's comments shared the following common themes; the meetings provide current and pertinent information to participants, they provide an opportunity to share ideas with others in the area and strengthen connections with other mathematics instructors in the area.

Department Self Evaluation

The department feels that the objectives stated for the PMET mini-grant were achieved. Changes in the objectives for the TTM were implemented. Increased preservice teacher participation was seen at each meeting. They had the opportunity to discuss issues in mathematical education with teachers currently in the classroom. They could interact with veteran instructors; listen to classroom experiences from teachers in the field and encounter different teaching philosophies and attitudes. Both veteran instructors and teacher candidates listened to speakers whom provided relevant information that created discourse among the participants. Topics in mathematics were discussed at each meeting. Teacher candidates were able to discuss and participate with veteran instructors who were able to demonstrate the importance of a deep understanding of mathematics.

Input from teachers in the field was used to adapt the math methods course at UW-Platteville and reaffirm that many aspects of our mathematics teacher education program should remain the same.

Satisfying the objectives of the PMET mini-grant has helped the development of achieving the revised goals of the TTM Network but work is still required. There are weaknesses with the network that still need to be addressed. Attendance at meetings was good from 2 year institutions but work needs to occur to increase participation with four year institutions. To speak as one voice to advocate for the education of future mathematics instructors more involvement from area 4-year institutions will be required. The pre-service teacher attendance was also very good but it was a challenge to have them actively participate in conversation and interact with the established teachers. Efforts need to be given to show teacher candidates need to change their frame of reference from being a student to being a colleague of the participants in the network. The input from the surveys and questionnaires given to classroom teachers on the mathematics required to make a good teacher was insignificant. Most of the teacher's comments dealt with the pedagogical issues of teaching the course and not the actual mathematics. Most of the middle school and high school teachers felt knowing how to teach the different aspects of mathematics was just as important as the content of mathematics taught to future teachers.

Summary

The funds from the PMET mini-grant were well spent. The participants represent a broad range of educators in mathematics education from post-secondary, high school, middle school and preservice teachers. At each meeting all participants learned something about mathematics education. It provided the opportunity for teacher candidates and math education teachers to network with math instructors in the field and learn from their experiences.

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