STEM AND LEAF

Science, Technology, Engineering, and Mathematics Network Newsletter #6

<table>
<thead>
<tr>
<th></th>
<th>9 8 8 2 0 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>8 8 7 4 3 1 0 0 0</td>
</tr>
<tr>
<td>7</td>
<td>6 5 4 3 1 0 0 0 0</td>
</tr>
<tr>
<td>6</td>
<td>9 7 6 4 3 3 1</td>
</tr>
<tr>
<td>5</td>
<td>9 4 3</td>
</tr>
</tbody>
</table>

Upcoming events

The winter months present great opportunities to seek warmer weather and to learn about STEM. Listed below are several conferences relevant to STEM.

- Association of Mathematics Teacher Educators (AMTE): February 9-11, 2012 in Fort Worth, TX. Information can be accessed at: [http://www.amte.net/conferences/conf2012](http://www.amte.net/conferences/conf2012)
- National Science Teachers Association (NSTA): March 29-April 1, 2012 in Indianapolis, IN. Information can be accessed at: [http://www.nsta.org/conferences/2012ind/?lid=con](http://www.nsta.org/conferences/2012ind/?lid=con)
Toyota was looking for an opportunity to sponsor a new idea for an innovative opportunity to create a model that could be replicated. Western Kentucky University caught their attention with their idea. The Toyota Math and Technology Leadership Academy (MTLA) is a professional development initiative for elementary math teachers of grades 3-5 in the Bowling Green Independent Schools and Warren County Schools. MTLA is designed to improve student and teacher dispositions and beliefs, increase student learning, and increase family involvement in math and technology.

Faculty members from Western Kentucky University serve as directors and instructional leaders for MTLA. The 3-year grant award encompasses 14 Teacher Scholars—one chosen from each of the schools, taking three courses for nine credit hours, all expenses paid, with evening, weekend, or online seminars sprinkled throughout the duration of MTLA. The coursework is focused on a comprehensive math and technology approach that will improve teachers' knowledge and instructional practices in math, technology, diversity, leadership, and assessment.

What are the perks?

- A $2000 stipend per Teacher Scholar upon completion of the grant award requirements.
- Nine hours of graduate credit upon successful completion of the courses in spring 2011.
- A $2000 mini-grant to purchase equipment or instructional materials.
- Strengthened math and technology knowledge and instructional practices in classroom settings.
- Strengthened understanding and skill sets in leadership, assessment, and diversity to help implement change in the school culture.
- An opportunity to work with the Housing Authority of Bowling Green and children to implement products designed in the coursework.
The instructional modules that participants design throughout the coursework will be piloted and implemented at the Housing Authority of Bowling Green as well as at the participant's school. In the second and third year of MTLA, participants lead other teachers in professional development and implementation of the instructional modules in their schools.

Mini-Grants were awarded this summer, for year two and year three of the initiative's implementation. The Scholars learned how to write an official grant and will write a grant report at the conclusion of the initiative along with a grant presentation.

For the leadership component of the initiative, Scholars have submitted and have been accepted to either the state math or technology conference this year and will be presenting aspects relating to what they have learned and are implementing related to their work in this initiative. They are also showing impressive leadership, initiative, and quality in their work as their proposals are accepted.

During year 1, Toyota MTLA participants were selected. They then began gearing up for their online coursework! ELED 571, Leadership, Math and Technology, was taught from Oct 4 - Dec 6, 2010. Next, ELED 572, Math and Technology Methods for Diverse Learners was taught Jan. 3 - Mar. 14, 2011. The third course was ELED 573, Math and Technology Assessment, Mar. 28 - May 30, 2011. Each course offered three seminars for each course at the participants' schools. Topics include discussion of research, technology demonstrations, guest speakers on leadership and professional growth planning.

During year two, participants are learning and practicing instructional practices in math, technology, assessment, and meeting the needs of diverse learners. Scholars, in teams, have been implementing their projects at the Housing Authority of Bowling Green with the children there to help improve learning and services at their center.

Research is being collected and analyzed as well. Pre-assessments were collected on three sets of educators -- Toyota MTLA Participants, another teacher at their school who will be the control group, and the school principals -- on the following:

- Leadership style and qualities
- Math efficacy
- Technology Integration levels
Data is also being collected to show evidence for parent involvement and communication for technology and mathematics.

Unexpected Outcomes

A wonderful outcome of the initiative has been that the courses developed for the MTLA initiative were also applied toward the development of the first Elementary Math Specialist endorsement for Kentucky. The three pedagogy courses in this initiative, along with two math courses, comprise the 15-hour endorsement. Seven of the 14 Scholars completed the 2 additional Math course beyond the scope of this grant to complete the Elementary Math Specialist Endorsement (EMS).

Professional Development

- Professional development at seminars have included the following:
- Web 2.0 tools and iPad/iPod apps at Seminars
- Creating video with green screen technology
- Leadership Styles: How to recognize styles and complement others’ styles
- Digital Storytelling Techniques
- HEAT Lessons - Higher Level Thinking, Engagement, Authentic Learning, Technology Integration
- How to Write a Grant
- Lenses on Learning

Leadership, Presentations and Professional Growth Plans (PGP)

Scholars are implementing their PGPs throughout the school year. Scholars are continuing developing their WordPress Blogs to report progress on their PGP activities. Scholars have applied to and have been presenting and/or will present at local, state, and/or regional conferences to disseminate what has been learned in MTLA project/initiative. The Scholar teams are presenting their HABG (Housing Authority of Bowling Green) projects at the bi-monthly seminars.

Course Products:

- Digital Storytelling
• Professional Growth Plan
• Mini-grant
• Problem Solving Plan with Technology Integration/HEAT
• Numerous technology projects such as Animoto, Prezi, Glogster, etc.
• WordPress Blogs to report PGP activities
• Math Assessment Plans

This Math and Technology Leadership Academy can be replicated at almost any university with collaboration with the teacher educators and local elementary teachers. There are many corporate and government grants that may fund this type of program. The courses could be offered through agreements with the university while the school systems could provide equipment and mini-grant needs. All have benefitted in this MTLA program. Many of the teachers have truly emerged as leaders in their schools. They are presenting at local, state, and regional conferences. They have conducted professional development in their school systems. They have initiated projects at the Bowling Green Housing Authority, and the list goes on. The university professors have gained a broader knowledge of the school systems involved in the project, developed a close network of teachers, developed new university courses, and more. The initiative forged a relationship between the university and corporation where both have benefitted immensely - a product of increased student achievement as a result of an innovative idea.

Resources of utmost quality for this initiative:


