

**19th Annual Kansas City Regional
MATHEMATICS TECHNOLOGY EXPO**

**Schedule of
Events and
Abstracts**

**University of Missouri – Kansas City, Kansas City, MO
Friday and Saturday, October 2 and 3, 2009**

18th Annual Kansas City Regional MATHEMATICS TECHNOLOGY EXPO

Thank you!

We thank UMKC for their generous hospitality in providing the new home for the EXPO. They provided the lecture halls, classrooms, and exhibitor areas, as well as computers, Internet connections and audiovisual equipment. We thank the UMKC students and faculty, who have given up their classrooms so the EXPO could take place!

We thank the Kansas City Professional Development Council (KCPDC) for sponsoring many EXPO participants. We thank Johnson County Community College for funding paper and printing for EXPO mailings, the program booklet, EXPO packet information, and evaluations. We thank William Jewell College for funding paper and printing of promotional mailings.

Registration in the 3rd floor lobby of Haag Hall

Friday, 8:00 a.m. – 2:00 p.m., and Saturday, 8:00 a.m. – 11:00 a.m.

Complimentary Continental Breakfasts

Continental breakfasts are available Friday and Saturday mornings in the registration area, sponsored in part by Pearson Publishing.

Lunches

The Friday lunch buffet is only \$5.50 a person, due to a generous donation from UMKC's FaCET (Faculty Center for Excellence in Teaching). The Saturday box lunch is \$8.00 a person. Lunches were ordered with pre-registration, but there may be some available for purchase at the EXPO registration table.

Textbook, Hardware, and Software Exhibitors: Friday, 8:00 – 2:45 p.m.; Saturday, 8:00 a.m. – 1:00 p.m.
Cengage, Hawkes, Key Curriculum, McGraw Hill, Pearson, and MAA Books, as of 8-12-09.
(Not all exhibitors will be present on Saturday.)

Door Prizes:

We thank the following companies that have donated door prizes to be given away following the Keynote Address and the Invited Address:
Casio, Design Science, MacKichan, as of 8-12-09

Earn 1 hour of graduate credit through the UMKC School of Education Continuing Education.
Sign up at the EXPO Registration Table.

FRIDAY, October 2, 2009

Welcome and Introductions

Friday, 8:30 a.m.

Room 115

Joe Yanik, 2009 EXPO Group Chair, Emporia State University, Emporia, KS

Dr. Karen Vorst, Dean of the College of Arts and Sciences and Professor of Economics at UMKC

SESSION 1 – Keynote Address

Friday, 8:30 a.m. – 9:50 a.m.

Room 115

Beyond Calculators: Handheld Technologies for Math Teaching and Learning

Lila Roberts

Clayton State University, Morrow, GA

Over the past twenty years or more, graphing calculators have become a technology staple in the mathematics classroom. Relatively low cost, portability and wide range of functionality are all factors in the mainstream acceptance and use of these devices by mathematics instructors. A new class of powerful handheld devices, including iPod, iPhone, Pocket PC's, and other portable computing devices, is poised to change the face of how mobile technology is used in teaching and learning mathematics. When examining the potential classroom uses of handheld devices, an important consideration must be how we modify current practices to effectively take advantage of the capabilities of these devices beyond basic calculator and graphing functions. This presentation will give an overview of the new technologies and their applications as well as a provocative look at key issues in the inclusion of these devices in our mathematics classrooms.

Door prizes will be awarded directly following this address.

SESSION 2

Friday, 10:00 a.m. – 10:45 a.m.

2A. ***Hands-on GeoGebra***

Haag 301 **Andy Bennett and Danielle McNaney, Kansas State University, Manhattan, KS**

We have implemented a system where on certain assignments, students are able to select among comparable problems in a variety of contexts. This enables students to choose word problems related to their major or their interests. By having assignments turned in online and organized by context rather than class time, the grading burden is actually reduced. We will report on how the system works and initial reactions from students.

2B. ***Symbodium 101: SmartBoard Technology Without the Expense***

Haag 312 **Rita Drybread, Neosho Community College, Chanute, KS**

Sympodium 101 will focus on the use of a sympodium in the math classroom. The sympodium is classroom technology used to present a lesson in a unique, interactive and easy method. The

sympodium connects to a computer and is used as the monitor. The user is then able to write on the surface of the sympodium to project the live image, save and forward their work, create movies, print work and much more. The sympodium uses SmartBoard technology software, but without the expense of the entire SmartBoard system.

2C. ***Incorporating TI-Smartview, GSP, Winplot, and others with SmartBoard***

Haag 313 **Richard Gill, Blue Valley High School, Stilwell, KS**

Several programs are available that can be integrated or used along with SmartBoard for presentation of mathematics. Programs that will be demonstrated include SmartBoard, TI-Smartview, Geometer's Sketchpad, online textbook (Discovering Geometry), Winplot.

2D. ***Graphing Solutions to Differential Equations with Excel***

Flarsheim 460 **Brian Albright, Concordia University, Seward, NE**

Euler's method is a relatively simple algorithm for numerically estimating solutions to differential equation. We will demonstrate how to implement Euler's method in Excel to graph approximate solutions to differential equations. We will also show how to use scroll bars to dynamically change the values of parameters in differential equations and analyze the results. These topics will be applied to different types of differential equation models including Newton's law of cooling, quadratic population models, and Lanchester combat models.

2E. ***COMMERCIAL DEMO: Addressing Student Motivation and Success in Math with WileyPlus***

Flarsheim 462 **Brad Franklin, Wiley and Sons, Lincoln, NE**

We'll discuss a variety of strategies to increase student motivation and retention, including: daily math exercises, an "interactive syllabus," pre-lecture online quizzes, in-class use of media, embedded tutorials, enabling students to show work, real-time diagnostic reporting, and more... WileyPLUS will be featured, but many of the strategies generalize to other systems as well. Attendees will get to experience many of these strategies for themselves!

SESSION 3 Exhibitors

Friday, 10:45 a.m. – 11:30 a.m.

This time is provided especially so that EXPO participants will have a chance to visit the Exhibitors in the 2nd and 3rd floor lobbies of Haag Hall. The Exhibitors Area will also be open at other times during the EXPO.

SESSION 4

Friday, 11:30 a.m. – 12:15 p.m.

4A. ***NEW! View Rare and Historical Books in Linda Hall Library***

Haag 2nd floor **Bruce Bradley, Librarian for History of Science, Linda Hall Library**

Lobby

This is one of two separate opportunities for hands-on viewing of over a dozen books; it is not a tour. Examples: the 1482 first printed copy of Euclid's *Elements*, a 1637 copy of Descartes' *Discours*, the 1696 first calculus textbook of L'Hopital, books by Newton, Agnesi, Galileo, and more.

4B. ***Do Students Learn as Much from Interactive Software as From a Lecture?***

Haag 201 ***A Study We Did at Longview***

Ken Eichman, Metropolitan Community College – Longview, Lee's Summit, MO

Because I have been committed to wise use of technology for years, I have also viewed with much skepticism the claims of vastly improved student success for students who use some particular

electronic learning system. I have also been shocked by the poor data analysis on which some of these claims are based. This talk will outline a process by which you can determine if students at your college, with your teachers, are benefiting from using any of the several electronic learning systems that are currently available. The results of the study I administered will be shared, although the product will remain “anonymous”. To be fair, the product has undergone substantial revision since this study was done. However, I will also share my opinions as to what needs to be done to improve these products.

4C. ***Brainstorming – Technology on the Horizon:***
Haag 312 ***Wolfram|Alpha, the Kindle, and YouTube EDU. Can we talk?***
Moderators: EXPO Planning Group
A demonstration of the technology will be followed by a group discussion.

4D. ***Clicking Your Way to Student Engagement***
Haag 313 ***Libby Corriston, Johnson County Community College, Overland Park, KS***
Using clickers is a great way to spark conversation in the classroom! In this session, the EXPO audience will participate in a clicker session including a variety of questions that the presenter has prepared. She will then demonstrate the particulars of successfully creating and running a clicker session, which is based in PowerPoint. Handouts will be provided. She will be using the Turning Point clicker software, and will share details on the cost of using clickers in the classroom with Turning Point. (The software itself is free!) Clickers will be provided for participants to use during this session.

4E. ***COMMERCIAL DEMO: MyMathLab for Developmental Mathematics through Calculus***
Flarsheim 460 ***Jennifer Piper and Eric Olson, Pearson Publishing***
Powerful homework and test manager: Create, import, and manage online homework assignments, quizzes, and tests that are automatically graded. You can choose from a wide range of assignment options, including time limits, proctoring, and the maximum number of attempts allowed. Interactive tutorial exercises: MyMathLab’s homework and practice exercises are correlated to the exercises in the textbook, and they regenerate algorithmically to give students unlimited opportunity for practice and mastery. Most exercises are free-response and provide an intuitive math symbol palette for entering math notation. Exercises include guided solutions, sample problems, and learning aids for extra help at point-of-use, and they offer helpful feedback when students enter incorrect answers. Study plan for self-paced learning: MyMathLab’s study plan helps students monitor their own progress, letting them see at a glance exactly which topics they need to practice. MyMathLab generates a personalized study plan for each student based on his or her test results.

LUNCH

Friday, 12:15 p.m. – 1:30 p.m. in the Freshens area on the first floor of the University Center

SESSION 5

Friday, 1:30 p.m. – 2:15 p.m. for 5A, 5C, and 5D; and 1:30 p.m. – 3:15 p.m. for 5B

5A. ***A Sighted Mathematician Meets an Unsighted Math Student***

Haag 201 **Grant Lathrom, Missouri Southern State University, Joplin, MO**

During the Fall and Spring semesters of 2009, I have had the pleasure of having a student with complete visual impairment in my general education math classes. Some of the problems encountered in communicating mathematics between sighted teacher and unsighted student will be presented along with the technology solutions we employed to overcome those problems.

5B. ***WORKSHOP: The TI-Nspire: A Wireless Highway to Teacher Freedom***

Haag 312 **Patrick Flynn, Olathe East High School, Olathe, KS**

TI-Nspire Navigator is a completely wireless classroom learning system that is designed to help math and science educators: increase student engagement, instantly assess each student's understanding, and maximize efficiency of classroom learning time. I was a pilot site for this device last school year can speak from experience how it helped me.

5C. ***COMMERCIAL DEMO: ALEKS 3.0 – Get Better Results!***

Haag 313 **Lori Coates and Cathy Riley, McGraw Hill**

5D. ***Win at the Game of Mathematical Proofs using ‘ToyProofs’***

Flarsheim 460 **Joe Yanik, Emporia State University, Emporia, KS**

During the spring semester of this year, I used a collection of programs called “ToyProofs” to introduce the concept of a proof at the beginning of my College Geometry class. I will talk about the benefits that it offered and allow the participants to try out the programs themselves. This should be of interest to anyone at any level who has an interest in teaching students how to write proofs.

SESSION 6

Friday, 2:30 p.m. – 3:15 p.m.

6A. ***WvEB Mathematics: Streaming College Courses to High School Students***

Haag 201 **Michael Mays, West Virginia University, Morgantown, WV**

WvEB Mathematics is an initiative to bring college courses to "middle level" high school students, college bound students who might otherwise opt to take no math course in their senior year. College Algebra and Trigonometry are each offered as a fifteen week course, to make a full year of coursework possible. Syllabi and course activities match what is done on campus, and course content is distributed via CD or streamed over the internet. High school teachers serve as facilitators, monitoring student progress, managing computer activities, and providing guidance and direction. Facilitators meet together three times a year for professional development activities related to the courses. Custom java applets have been developed for modeling, graphing, and exploring course topics. We will describe the history of WvEB Mathematics, demonstrate course content including laboratories, and discuss prospects for expansion of the project in the future.

6B. ***COMMERCIAL DEMO: All Math Software is Not Created Equal***

Haag 313 **Brittany Walker, Hawkes Learning Systems, Charleston, SC**

The need for and use of technology has become increasingly prevalent in mathematics courses. But with all the software options available, it can be difficult to determine the differences from one system to another. Hawkes Learning Systems (HLS) is a unique mathematics courseware program

and is proven to be more effective in improving student performance. Students learn more efficiently through interactive tutorials, unlimited practice, mastery-based homework assignments, and error-specific feedback provided by artificial intelligence. Curious about the differences that HLS has to offer? Come to discover how HLS is the perfect solution for student success!

6C. ***Making 2D Graphs and Creating Animations with Free 'Winplot' Software***

Flarsheim 460 **Phil Veer, Johnson County Community College, Overland Park, KS**

In this presentation, we will examine how to use Winplot software to create 2D graphs that can be used in Word or PowerPoint for developmental math through Calculus courses. We will examine options available for graphing explicit, implicit, parametric and polar equations. In addition, we will examine ways to show movement of the graph through the use of animation with the software. Explanation and handouts will be provided. Everyone is welcome.

POST-SESSIONS *Friday, 3:30 p.m.*

PS A. ***NEW! View Rare and Historical Books in Linda Hall Library***

Haag 2nd floor **Bruce Bradley, Librarian for History of Science, Linda Hall Library**

Lobby This is the 2nd of two separate opportunities for hands-on viewing of over a dozen books; it is not a tour. Examples: the 1482 first printed copy of Euclid's *Elements*, a 1637 copy of Descartes' *Discours*, the 1696 first calculus textbook of L'Hopital, books by Newton, Agnesi, Galileo, and more.

PS B. ***MOMATYC meeting***

Haag 312 (Interested KAMATYC and MOMATYC participants will go to supper together after the meetings.)

PS C. ***KAMATYC meeting***

Haag 313 (Interested KAMATYC and MOMATYC participants will go to supper together after the meetings.)

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Saturday EXPO schedule → → → → →

SATURDAY, October 4, 2008

Welcome and Introductions

Saturday, 8:30 a.m.

Haag 301

Joe Yanik, 2009 EXPO Group Chair, Emporia State University, Emporia, KS

SESSION 7 – Invited Address

Saturday, 8:30 a.m. – 9:50 a.m.

Haag 301

Vertical Integration of Technology in Teaching

Michael Mays

Eberly Professor of Mathematics and
Director of the Institute for Mathematics Learning at West Virginia University

Consider the range of options available for using technology in the mathematics classroom: graphing calculators (CAS or not), spreadsheets, web based activities using Java applets or Flash, course management systems, large stand-alone programs like Mathcad or Mathematica, streaming media, homework systems from publishers or WeBWork,...If every semester and every class demands a new mode of interaction, and sets new expectations and new rules for appropriate technology, then the value of technology is diluted. Students focus on mastering the user interface instead of on the mathematics that is being illustrated. We will look at how to maintain a common “look and feel” for technology across mathematics classes and give examples of ways to institutionalize support for technology, both within an academic department and more broadly.

Door prizes will be awarded directly following this address.

SESSION 8

Saturday, 10:00 a.m. – 10:45 a.m. for 8B, 8D, and 8E; and 10:00 a.m. – 11:45 a.m. for 8A and 8C

8A.

Using GeoGebra Applets in WeBWork Problems

Haag 201

Jason Aubrey, University of Missouri, Columbia, MO

WeBWork is a Perl-based open source system for delivering individualized mathematics problems over the web. WeBWork features robust and flexible problem authoring capabilities, allowing instructors to deliver sophisticated and pedagogically meaningful problems to students over the web. This presentation on WeBWork will have two parts. (1) By way of orientation, I will showcase various standard types of problems which may be authored with WeBWork. (2) I will demonstrate how to use GeoGebra applets within WeBWork problems. Recent developments in WeBWork make it very easy to include interactive Flash and Java applets within WeBWork problems. I will show some examples of this, using GeoGebra applets in WeBWork problems, and talk about how to include these applets in WeBWork problems. The demonstration will not presuppose any particular

expertise on the part of participants, but I will make reference to code written in Perl, Javascript, and XML.

8B. ***Brainstorming (again) – Technology on the Horizon:***
Haag 312 ***Wolfram|Alpha, the Kindle, and YouTube EDU. Can We Talk?***

Moderators: EXPO Planning Group members

A demonstration of the technology will be followed by a group discussion.

8C. ***Creating Math Video Shorts Using the Flip Mino Camcorder***
Haag 313 ***Halley Chapman, Southwest Early College Campus, Kansas City, MO***

We'll describe the motivation and reasoning behind this project, the mechanics of picking a mathematical idea to illustrate visually, drafting a script with the 6th grade students, recording video with the tiny Flip camcorder, tips on the actual use of the Flip, and finally how to write titles and pull the movie together on a digital storyboard with Windows Movie Maker. Our video tackled the epics of the area of a circle, the circumference of a circle, integer addition and subtraction, and solving linear equations with integer coefficients. You'll also hear what the students had to say about his experience, which took place May 19 – 29, 2009, at Southwest Early College Campus ending with our screening the videos in the first Mathematics Film Festival at the school. Although we did this with 6th graders, the principles apply to any mathematics class.

8D. ***COMMERCIAL DEMO:***
Flarsheim 460 ***Using 'Enhanced WebAssign' to Get Through Homework Without Breaking a Sweat***
Rochelle Beatty, Cengage Learning

Are you interested in learning more about online homework? Do you want to know how it is being successfully used in the classroom? This session will discuss the benefits of using online homework from both instructor and student perspectives, focusing on how Enhanced WebAssign is used in the classroom by current instructors.

SESSION 9

Saturday, 11:00 a.m. – 11:45 a.m.

9A. ***Demos with Positive Impact:***
Haag 201 ***A Family of Resources for Teaching and Learning Mathematics***
Lila Roberts, Clayton State University, Morrow, GA

Since 2000, Demos with Positive Impact (<http://www.athdoems.org>) has been a project that has connected hundreds of mathematics instructors and students all over the world to peer-reviewed, colleague-contributed resources for teaching and learning mathematics. Originally designed with instructors in mind, Demo With Positive Impact has become a rich resource for students as well. The Demos with Positive Impact collection is growing! Currently under development are two new members of the "Demos" family – *mobilemath@mathdemos* and *accessiblemath@mathdemos*. *mobilemath@mathdemos* is a collection of resources directed toward the use of mobile devices in the mathematics classroom. *accessiblemath@mathdemos* is a collection of resources for mathematics teaching and learning that are designed for accessibility by users who have visual or hearing impairments. Each of the two new collections contains adaptations and/or extensions from materials in the original Demo with Positive Impact collection. This presentation will highlight some of the materials in the Demos with Positive Impact collections. In addition, plans for continued development will be presented. (David R. Hill of Temple University is co-director with Lila Roberts.)

- 9B. ***MyMathLab vs. ALEKS – Which One Adds Up?***
Haag 312 Heather Benton, Friends University, Wichita, KS
 We live in a day and time when there are more software options available for classroom use than ever before. Math teachers naturally want to use the latest and greatest software, but without the time to try out and research all of them, how does one choose among them? Come hear about two of the hottest software options currently on the market and discover the pros and cons from a school that that currently uses both. By exploring Friends University's College of Adult and Professional Studies use of ALEKS for some classes and MyMathLab for others, you'll discover the optimal uses of both software systems as well as hear student and instructor feedback after semesters of use.
- 9C. ***COMMERCIAL DEMO: What's New from Texas Instruments?***
Haag 313 Tom Allen, Texas Instruments, Rosemount, MN
 A Hands-on workshop of the latest products from Texas Instruments and new support materials for Algebra and Geometry teachers.
- 9D. ***WeBWork, An Open Source System for Online Math Homework***
Flarsheim 460 Jason Aubrey, University of Missouri, Columbia, MO
 WeBWork is a Perl-based open source system for delivering individualized mathematics problems over the web. WeBWork features robust and flexible problem authoring capabilities, allowing instructors to deliver sophisticated and pedagogically meaningful problems to students over the web. In this workshop I will provide an introduction to some of the capabilities of WeBWork, and guide attendees through a hands-on demonstration of how to use WeBWork. During the introduction, I will showcase the diverse types of problems which may be authored with WeBWork. This will include problems in precalculus, calculus, linear algebra, multi-variable calculus, and complex variables. I will also talk about some of what we know about the impact of WeBWork on learning, and tips for getting up and running with it at your institution. Participants need only be familiar with using a web-browser, and have an interest in online delivery of mathematics homework.

LUNCH

Saturday, 11:45 a.m. – 1:00 p.m. in Massman Hall

SESSION 10

Saturday, 1:00 p.m. – 1:45 p.m. for 10A; and 1:00 p.m. – 2:45 p.m. for 10B, 10C, and 10D

- 10A. ***Online PreAlgebra Students Actually Do Their Homework***
Haag 312 Bethany Chandler, Butler Community College, El Dorado, KS
 During this presentation we will discuss the benefits of using an online homework system to supplement instruction and motivate students to do their homework. We will discuss the benefits of both teaching and learning with software. There will be some demonstration of Hawkes Prealgebra courseware.
- 10B. ***Using Maple to Help With Undergraduate Research***
Haag 313 Gavin Waters, Missouri Western State University, St. Joseph, MO
 In the past 2 years, I have had 7 undergraduate students present in sectional MAA conferences. The topics ranged from biological DNA dynamics to chaotic encryption. Most of these topics stem from the differential equations course I teach every spring at MWSU. I heavily introduce Maple in this

course and I will be showing you some of the problem sets and projects developed for this course. I will assume that you know nothing of Maple but have a basic understanding of Calculus.

10C. **WORKSHOP: Using Winplot's 3D Graphing Features**

Flarsheim 460 **Uwe Conrad, Cowley College, Wichita, KS**

This workshop will provide detailed instructions on the use of many of Winplot's 3D graphing capabilities. Participants will learn how to generate Surface Plots, Normal Vectors, Tangent Planes, and Tangent Lines. Winplot differs greatly from the capabilities of graphing calculators since it allows the user to plot multiple surfaces on the same 3D coordinate system. The program is self-contained and can be installed on a portable drive (memory stick) or even a floppy disk (1.44 Meg). Participants are encouraged to bring a memory stick in order to save their work. Winplot is not a Mathematics Program like Maple or Mathematica – it therefore forces the user (Teacher and Student alike) to think about the task at hand. Winplot is a Free Program provided by Rick Parris and available for download on the "Peanut Software Homepage" <http://math.exeter.edu/rparris/>.

10D. **COMMERCIAL DEMO: Dynamic Math Through Sketchpad LessonLink**

Flarsheim 462 **Dotty Sides, Key Curriculum Pres, St. Louis, MO**

This powerful new online service will help you integrate Dynamic Mathematics into your curriculum and increase student learning for grades 3-12. This searchable library of more than 500 Sketchpad™ activities makes using The Geometer's Sketchpad® easier than ever! Sketchpad LessonLink gives you: Hundreds of classroom-tested Sketchpad activities and demonstrations aligned to your textbook and state standards; everything you need in one place—pre-built sketches, teaching notes, and student worksheets.

www.kcmathtechexpo.org

The 2009 EXPO Group:

- **Joe Yanik** (2009 EXPO Chair), hyanik@emporia.edu,
Emporia State University, Emporia, KS
- **Andy Bennett**, bennett@math.ksu.edu,
Kansas State University, Manhattan, KS
- **Libby Corriston** (Publications, 1995 & 1996 EXPO Chair), libbyc@jccc.edu
Johnson County Community College, Overland Park, KS
- **Richard Delaware** (Financial Secretary, Site Coordinator, 1993 & 1994 EXPO Chair),
delawarer@umkc.edu,
University of Missouri – Kansas City, Kansas City, MO
- **Mayumi S. Derendinger** (Exhibitors), sakatam@william.jewell.edu,
William Jewell College, Liberty, MO
- **Ken Eichman** (Registration, 1997 & 1998 EXPO Chair), Ken.Eichman@mccck.edu
Metropolitan Community College – Longview, Lee’s Summit, MO
- **David Ewing** (Special Speaker Contact) ewing@cmsu1.cmsu.edu,
University of Central Missouri, Warrensburg, MO
- **Richard Gill** (Publicity, 2004 – 2008 EXPO Chair), rgill@bluevalleyk12.org,
Blue Valley High School, Stilwell, KS
- **Brian Hollenbeck** (Presiders), bhollenb@emporia.edu,
Emporia State University, Emporia, KS
- **Tamatha Leuschen** (Webmaster), Formerly of Pembroke Upper School, and Center High School,
Kansas City, MO
- **Gavin Waters** (Local transportation), gwaters@missouriwestern.edu,
Missouri Western State University, St. Joseph, MO
- **Marian VanVleet** (Recording Secretary, 1999 – 2003 EXPO Chair), mvanvleet@everestkc.net
Retired from the University of Saint Mary, Leavenworth, KS

Events/Activities in Kansas City: www.kansascity.com