



Research News

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Increasing Student Achievement by Increasing Teachers' Content Knowledge

Only 50% of New Jersey students perform at a proficient level or above in math and science, as measured by HSPA and Biology EOC exams. Reform efforts focused on increasing student awareness of exam items and skills (teaching to the test) have not been successful. At the heart of the rationale for the Math & Science Partnership (MSP) professional development program is the idea that in order for student achievement in math and science to elevate, teachers' own subject matter knowledge must also be developed.

Dr. Brian Baldwin, assistant professor of Science Education at the NJ Center for Science, Technology and Mathematics (NJCSTM) at Kean University, has developed an innovative professional development plan that offers in-depth practice to empower math and science teachers to be well-rounded in pedagogy, content, technological and curricular knowledge. The MSP program, funded by a grant from the New Jersey Department of Education, is in its third successful year at Kean.

MSP activities are uniquely designed to meet the goals of the program. An intensive, two-week long summer professional development institute held at NJCSTM focuses on the relationship between content knowledge in math and science and the specific standards within the NJ Core Curriculum Standards that have been documented to be

traditional problem areas for students.

Content-area specialists conduct workshops that focus directly on these problem areas. Then, throughout the academic year, all teachers participate in the design, development, implementation and reflection of one particular lesson that directly focuses on content investigated during the summer institute as part of a modified Japanese Lesson Study model.

A number of activities continue the momentum developed during the summer institute. One unique opportunity is the allowance of MSP teacher-participants to register for one course in the online *Seminars On Science*, offered through the American Museum of Natural History in New York, and then to attend an in-person professional development workshop held at the museum, led by a staff scientist and pedagogical expert. Approximately 80 teachers per year are part of the MSP program, in turn reaching over 6000 K-12 students in Central NJ. The partner school districts include Elizabeth, Middletown Township, Red Bank Regional, Boro and Charter Schools, Union County Vo-Tech, Plainfield, and Franklin Township.

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Dr. Brian Baldwin

Research Compliance Matters

Consent and Assent Forms

In this month's column, I would like to highlight some of the important and required aspects of the consent and assent forms. The goal of these forms is to inform potential participants about the study in question and describe what exactly they will be doing if they agree to participate.

It is imperative that consent and assent forms be easily understood by their potential audience.

The study has to be described to participants in a clear and concise fashion. There should be no ambiguities or anything that is "foggy" or unclear to your audience. The reader has to walk away understanding what is expected of them when they agree to participate. The researcher should describe the study and its related activities in exact terms and avoid using any discipline-specific jargon or terminology which might be unfamiliar to the intended audience.

Researchers run into problems with their IRB applications when they fail to adequately address either of these issues. For more information about the IRB review process, please visit <http://orsp.kean.edu>.

Contact Dr. Joseph Cronin jcronin@kean.edu or ext 73464 for questions and guidance related to research compliance

Grant Administration Topics

Cost Sharing/Match/In-kind Contributions

Cost sharing, match, and in-kind contributions are terms that refer to project costs that are supported by funding from a source other than the primary sponsor. Although the terms are sometimes used interchangeably, the University uses specific definitions for each. Direct cost-sharing is defined as out-of-pocket cost contributed by the University. Match is defined as funding that is pledged to match a portion of the primary sponsor's funding and may be in the form of cash or a third party in-kind contribution. In-kind contribution refers to non-cash contributions that are not recorded by the

University's accounting systems but can be assessed a cash value.

Mandatory Cost Sharing is required by the sponsor as a condition of obtaining a grant agreement. Voluntary Cost Sharing is not required by the sponsor. Mandatory Cost Sharing is supported by the University whereas Voluntary Cost Sharing is not.

Contact Brenda Dunlop bdunlop@kean.edu or ext. 73345 for questions and guidance relating to grant administration.



Deadlines & Reminders



Monday, February 18

Application deadline for FFRA

Monday, February 25

Deadline for Student Research Days Registration

Friday, March 1

IRB applications for February due

Monday, March 4

Deadline for Research Award Nominations (Student Research Awards and Faculty Research Mentor of the Year)

Student Spotlight



Influencing Girls to Study Computer Science

The field of Computer Science has had a shortage of females for many years but a team of Kean student researchers, Jennifer Latham, Nathaly Lozano, and Jennifer Greene, along with their advisor, Professor Carolee Stewart, are determined to change that. Computer games have long been one way teenage boys find an interest in Computer Science, but most of those games are not appealing to teenage girls. Prof. Stewart and her students received a Students Partnering with Faculty (SpF) summer research award to create a "girl-friendly" game using software purchased

by the grant. During June, Nathaly Lozano and Jennifer Latham taught themselves how to create a game using Game-maker. This was a serious effort on their part, including learning a new language, with not many public domain examples to learn from.

In the summer of 2012, they created *Gram's Grocery Shop*, a totally independent game that extended the story of a game created by Gail Carmichael of Carleton University in Ottawa, Canada, called *Gram's House*. That game is based on the idea that computers can help people. The SpF team's game extended the helping theme by enabling Gram to do grocery shopping with only her menu of what she wanted to eat to begin from. The player learns how to sort menu items into food categories to be able to find the food in the aisles of the grocery store. The SpF team wanted to improve the fun the player would have with the game experience so they designed and created two mazes into the game, where the player would collect coins with which to purchase the food. They also included a word game of spelling the menu items, to see if girls preferred word puzzles.

With the guidance of Prof. Stewart, Jennifer Greene created a pre-survey to determine demographics, technology background, and attitudes of students who would be piloting the game. Jennifer also created two game-like quizzes to determine the extent to which players were learning computer science principles. Finally, Jennifer and Prof. Stewart worked together to create forms and meet all the IRB requirements to conduct their pilot study.

In September and October, Prof. Stewart and her SpF team piloted *Gram's Grocery Shop* with teenage girls at Roselle Park Middle School. During October and November they collected, transcribed and analyzed the data. The post game survey showed that, of the students remaining to the 5th week, 54.3% said that modifying the design of *Gram's Grocery Shop* was their favorite part of the whole pilot program. These middle school girls view themselves as being capable of designing computer games in the future. *Gram's Grocery Shop* is viewable on Prof. Stewart's Kean web page at www.kean.edu/~cstewart/

ORSP News

February Workshop Highlight

Register at <http://orsp.kean.edu>

Using the CAVE and the Supercomputer in Research across Disciplines

Dr. David Joiner, NJCSTM

Thursday, February 21 - STEM 512

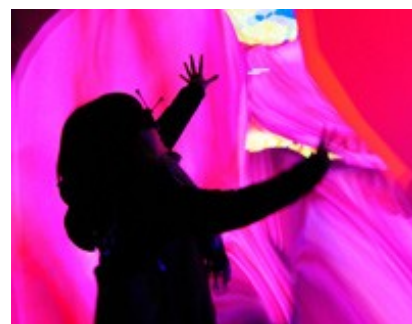
12:30 - 1:30, Lunch 12:00

The Kean CAVE is a 3-D immersive reality display that can be used for visualizing 3D data or designs. Software in the CAVE can display 3-D gridded or ungridded data using VisIT, GIS data using ArcGIS, chemical

and biological structure data using VMD, and 3D designs using Google Sketchup or VRML. The workshop will cover the data formats required in order to import data into the CAVE, the types of visualizations that can currently be viewed on the CAVE, and desktop software that can be used to prepare or view 3-D data.

While this workshop is primarily geared to science faculty, viewing data from physics, chemistry, biology, meteorology, and geology, additional users certainly include computer science faculty interested in virtual reality.

The CAVE may also be useful to faculty in the social sciences who may have multivariate data in which they are trying to find trends.



Someone with a design project that requires constructing 3-D models will also find this workshop of value.

All faculty are welcome!

Government Grant Opportunities

Opportunity Title	Due Date
US Department of Energy - Systems Biology Enabled Research on the Role of Microbial Communities in Carbon Cycling	3/4/13 (pre-application)
NIH - NIH Summer Research Program	4/2/13
NASA - Research Opportunities in Space and Earth Sciences	4/30/13
National Endowment for the Humanities - Fellowships	5/1/13
National Endowment for the Humanities - Challenge Grants	5/1/13
National Institute of Justice - Research on Firearms and Violence	5/2/13

Foundations and Corporations

Opportunity Title	Due Date
American Nurses Foundation - Nursing Research Grants	5/1/13
United States-Israel Binational Science Foundation - Transformative Science Grants	5/7/13
American Society of Human Genetics - Genetics Education Research Program	5/31/13
NASDAQ OMX Stock Market Educational Foundation - Grants and Dissertation Research	8/2/13 (letter of inquiry)
American Educational Research Association - Research Grants	8/31/13

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