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Travel Report

SC07 Education Program
Summer Workshop Series

Introduction to Interdisciplinary Computational Science Education for Educators
Bowie State University June 24- June 30, 2007

On June 24, 2007, seven students from Elizabeth City State University's Undergraduate Research Experience participated in Bowie State University's, Introduction to Interdisciplinary Computational Science Education for Educators. The event was an opportunity for educators and students alike to gain an in-depth, hands-on experience with supercomputing. The conference took place in the OIT Training Lab of the Thurgood Marshall Library on the campus of Bowie State University which was fully equipped with Dell Computers and a library of supercomputing books for reference. This supercomputing conference was sponsored by IEEE, Intel, National Computational Science Institute, SC07 Education Program, and TeraGrid.

The Lead Instructor of the conference was Dr. Bob Panoff. He has been the president of Shodor Educational Foundation for twelve years. The Shodor Educational Foundation is a "non-profit research and education organization dedicated to the advancement of science and math education, specifically through the use of modeling and simulation technologies and to advance science and math education through the use of computational science, modeling and technology." Since its founding in North Carolina in 1994, Shodor has always pursued a focused vision for changing education at the undergraduate, secondary and middle school levels by allowing faculty and students to explore new learning and teaching modes based on interactive explorations enabled by the tools of mathematical modeling and visualization. With funding from the National Science Foundation and others, Shodor and a national team of collaborators have created the National Computational Science Institute (NCSI) to enhance the training of

undergraduate faulty in computational modeling with workshops, tutorials, seminars, on-line resources, and network-assessable support. Computational science has arisen a new way of doing science, enabling scientists to gain an understanding of our material world that cannot be obtained from experiment or theory alone.

Students from ECSU included undergraduates: Camden Hearn (MVSU), Amanda Bland (MVSU), Tyrone Whitehurst (NSU), Andrea Grumbles (ECSU), Taneisha Kee (ECSU), graduate student, Paula Harrell (ECSU), and myself, Illiana Thomas (ECSU). Other schools represented at the conference were Randolph Community College, Bowie State University, Prince George's Community College, Southern University, University of Puerto Rico- Rio Piedras Campus, and Williamsport High School.

The workshops that we attended involved the methods for using AgentSheets, Excel, NetLogo, Mathmatica, and other Web-Based Tools. These applications were used to make models that would assist in helping students better understand science and are free for educational use. At the end of the conference, it was the responsibility of each participant to construct their very own model or re-build an existing one using one of the applications learned during the week. For my final project, I chose to use AgentSheets to model the effects of a motivated student on a non-motivated student. In AgentSheets, you use a story to model as situation. My story line was as follows: "While "running" if a high school **student** finds the motivation to study, they may spread it onto another ("too cool for school") student, and both students shall go to college." By adding the "timer" feature, I was able to create a graph that showed the rate of each "too cool for school" student as they changed to a motivated student. Agent modeling allows you to generate behaviors, build up in "what-if" situations (what would happen in the real world), and tell a reasonable story. The noun in your story line is the agent, the adjectives are the depictions, the verbs are the methods/rules, and the adverbs are the conditions.

Another workshop attended was directed towards Computational Science Education Awards to be made at the Supercomputing Conference 2007. They consist of The Undergraduate Computation Engineering and Sciences (UCES) Award Program, The Dr. Mary Ellen Verona Computational Science Teacher Leader Award Program, The Dr.

Robert M. Panoff Computational Science Student Award Program, and the SC07 Education Program Student Team Competitions. There was a strong urge to attend the Supercomputing Conference 2007 in Reno, NV. I gained much interest in attending the conference, especially from all that I was able to learn in one week from this conference.

One of the most realistic and intriguing quotes I learned from this conference is the equation:

$$\text{Satisfaction} = \frac{\text{Reality}}{\text{Expectations}}$$

This quotation means that if you enter a situation with high expectations and divide it with reality, your satisfaction rate will be low. If your expectations were lower and reality the same, satisfaction would be bigger. This is because when you divide by a smaller number then you get a bigger result (satisfaction).

The most powerful equation in science is HAVE = HAD + change. What do I need to know about how much change: reproduction rate, fertility rate, death rate: this is called aggregate modeling.

"Adept, Adopt, Adapt"

Through all of our modeling, we used the procedure of "Preview, View, and Review" and "Expectation, Observation, and Reflection."

This experience was greatly appreciated. I came into this conference not knowing quite what to expect, and left with a whole new outlook on the idea of modeling and supercomputing. I definitely feel as though there was a lot accomplished and in turn there are many factors I may be able to pass onto my peers.

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