Conference Related Student Experiences

NCTM Conference Experience

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What does it mean to be a professional in your chosen field? Professionals continually seek out knowledge and experiences with the goal of improving what they do and how they do it. Professionalism can take on many forms including participation in local and national professional organizations. Since 1992, undergraduate mathematics education majors in the Department of Mathematical Sciences of Ball State University have chosen to engage in professional activity by forming and maintaining membership in the department's Ball State Council of Teachers of Mathematics (BSCTM).

In November of 2009, faculty member Kathryn Shafer and seven members of the Ball State Council of Teachers of Mathematics (BSCTM) attended the annual National Council of Teachers of Mathematics (NCTM) conference in Nashville, Tennessee. Dr. Shafer and three BSCTM members attended the regional NCTM conference in Cleveland, Ohio, in October of 2008. Dr. Shafer facilitated the collection of the following written reflections on the 2009 conference experience. BSCTM is a student affiliate of the NCTM.

Michael Hosking reflects on his Nashville conference attendance.

As a senior in Secondary Mathematics Education, I thought that it would be beneficial to attend the NCTM Conference before I go out and student teach the following semester. I did not really know what I hoped to see at the conference other than new ideas from the mathematics community that I could implement in my future classroom. Prior to attending the conference, I looked at the list of workshops that would be offered. The workshop topics ranged over many different categories, including equity in the classroom and how to properly use technology in the classroom.

One of the most beneficial workshops I attended was titled "SMART Boards™, TI-Nspire™, and TI-Navigator™: How to Integrate This Powerful Combination!" This caught my attention because I had heard about and seen SMART Boards™, but I did not know how effective they could be in the classroom. Also, throughout the entire conference, the TI-Nspires™ graphing calculators were in almost every time slot for workshops and I wanted to see what the buzz was about.

During the workshop, the presenter, Tom Reardon, dazzled and amazed me with how he used the SMART Boards™ and TI-Nspires™ together. He was able to use a TI-Nspire™ emulator on his computer, which projected the interactive face of the calculator onto the SMART Board™ for all students to see. I remember back in high school when my teacher would give me instructions on how to use the graphing calculator, but I would fall behind because I could not physically see what she was doing. Mr. Reardon was not only able to show the audience the TI-Nspire™, but he was able to physically go up to the SMART Board™ and push the buttons on the screen as if it was a real, giant calculator. I believe this would be an excellent tool to use in a classroom, so that students can physically see what the teacher is doing on the calculator, and then see if they obtained the same output! The next thing that amazed me was that Mr. Reardon was able to use the SMART Board™ to save the work he created,

change it to a PDF and post it online for his students to use if they needed.

I believe that I can now see the practical use of these tools in my classroom, and even more than that, this workshop has shown me that we as teachers need to be constantly learning new ways to help our students. In light of this, I plan to become an NCTM member when I am a teacher and continue to attend these conferences, not only for my benefit, but also for my students' benefit!

Nicole Keenan reflects on her favorite Nashville session.

The session I found most interesting was "Oh No: Not Another Story!" presented by Sheila Allen. Having more of a focus on middle school education, the session provided a plethora of creative ideas for a variety of topics. For every suggestion presented, she had a costume, song, or mnemonic to help students remember the material. Ms. Allen's main message was to find a way to connect mathematics to students' everyday lives. Even though the session was in the form of a gallery workshop, where half of the audience watches the other half actually participate in the activities, Ms. Allen involved everyone. I could picture myself sitting in her classroom wondering what she was going to do next. She incorporated her own classroom experiences into her presentation and shared what "works" for students. An example was when Ms. Allen talked about scientific notation and her students' confusion regarding when the exponent should be negative or positive. She explained that teachers use the number line to show that as one moves to the right, the numbers increase; however, as we count the "loops" we move left for large numbers – which would, using the number line, call for a smaller number. Ms. Allen offered a solution by having students draw where their "new decimal" would be and draw the loops starting at the "new decimal" to the "old decimal." This allows the students to correctly connect movement on the number line to scientific notation. Ms. Allen identified a concept students struggle with, but also allowed the audience to see a better way of teaching the material so students can connect their prior knowledge. This session was a great experience, because as a pre-service teacher I was able to see my future classroom and begin the process of adapting my teaching to better allow students to understand mathematics.

Zachary Van Duzer reflects on a favorite session at the Nashville conference.

There were a lot of things that I experienced in the two days of my first-ever NCTM conference, but there was one specific session I attended that really caught my eye. I am the type of person who believes that the more technology you have in the classroom, the better off students are. The tactful use of technology will allow students to see a different representation of a specific problem. I tried to attend many different types of sessions while at the NCTM conference, but I always seemed to migrate to the sessions that involved the unique uses of some form of technology.

One session, entitled "On the Shoulders of Technology," provided a very unique way of incorporating technology in the mathematics classroom. The

presenter, Frank Sobierajski, was very experienced in many different forms of technology, and he provided many different methods of using technology to allow students to see the "bigger picture" of some mathematical concepts. I enjoyed this session because it gave me some great ideas about some of the things that I could do to help my students understand some concepts in a visual manner. One example that I want to use in my classroom is the concept of sliders in a Microsoft Excel spreadsheet. Mr. Sobierajski showed the dynamic nature of these sliders, and he showed many different ways in which sliders can be used in an algebra or geometry class.

The thing that I liked seeing in this session was the portion of the hour when the speaker showcased the newest version (5.0) of Geometer's Sketchpad. It was amazing to see all of the different ways that Geometer's Sketchpad could be used to calculate real-world problems. For example, Mr. Sobierajski inserted a picture of a roller coaster from Cedar Point and he had students calculate the slopes of different tangent lines on the track. This was a great way to make something that students may see as irrelevant (tangent lines) and morph it into something that is completely relevant to them.

I enjoyed attending this session of the NCTM conference, and I felt that the conference overall was a very beneficial experience for me. I obtained a lot of great ideas for my future classroom, and I will try to implement many of those ideas into my daily activities for my future students.

Mark Augustyn reflects on the vendor booths at Nashville.

This was the first professional conference I have attended and it will certainly not be the last. I spent the most time walking and talking in the vendor area. In this area, different companies and individuals had booths set up to sell various curriculum, technology, manipulatives or Internet services. This conference was the first time I have ever seen a SmartBoard™ in action and I was impressed with all that it can do. After I saw how expensive they are, I realized not many schools might have them. One of the vendors, Educon Tech ⟨educontech.net⟩ sold a kit for approximately $100 that had the same functionality as a regular SmartBoard™. The main difference was you could not use your fingers to write and manipulate things. Instead, you use an LED infrared pen and a Wii™ remote. The pen sends signals to the Wii remote, which are then sent to the computer and displayed. This is more practical for some schools since many cannot afford a SmartBoard™.

Recently, a small group of us received an assignment in our high school mathematics methods course to review a textbook series. Attending the conference made this assignment much easier than I thought it was originally going to be. I was assigned to review the Precalculus/Calculus books by Demana and Waits published by Pearson. I went to the booth and began talking with a sales representative. The representative was very nice and was more than willing to help us in any way possible. In return, I told her that I would send in my reviews as a thank you. She was also open to students emailing her any questions we may have. She said she would send the textbooks we needed to review and that we should be getting them around the first of December. Sure enough, I

got them over Thanksgiving break. I am really interested in thumbing through them to see the general layout and how these authors organize material and incorporate technology. Not only will these textbooks be useful for this assignment, but they will also be a great addition for my personal library as another resource I can use. These textbooks are also nice to have because they are the same books I will be using for student teaching.

Another idea I saw for the first time was white boards (The Markerboard People ⟨dryerase.com⟩). These are individual dry erase boards that students have at their desks. The teacher can assign a problem and when the students are finished, they can hold up the board so the teacher can glance to see if everyone has an understanding. This is something teachers can very easily use in their classrooms. Another vendor, LLTeach Inc ⟨www.LLTeach.com⟩ was selling a similar product. Instead of using dry erase boards, they had oversized plastic page protectors. The teacher can make copies of graph paper or a unit circle and insert it into the plastic sleeve. Students can still use markers to solve problems and can erase to solve new ones. I really liked this idea and plan to use it in my classroom.

I was able to visit with the Texas Instruments (TI) sales representative and pick his brain about their new products. This was eye-opening because there is a lot of hidden potential in these devices that a first time user would miss. I was able to play with and see the TI-Nspire™ and Navigator system for the first time. The TI-Nspire™ can do just about anything and everything related to mathematics. The things I liked about it were how you can move a function around in the graphing screen, find zeros and roots, integrate and differentiate, and input as you would write it on paper. This calculator has two interchangeable face-plates. One face was the newer TI-Nspire™, and the other was the older 84 system. The Navigators are a sled that the calculator can be placed on so that the teacher's computer can interact with the set of calculators. The teacher can take anonymous polls, send problems, and view what each student is working on. These two devices are really intriguing and will provide great learning opportunities that can deepen a student's understanding and actively engage a student. The drawback with these is it can make students too dependent on technology. If the students realize the calculator can do everything for them, they may not use pencil and paper to solve problems again. The students will be able to solve the problems, but they may not understand how the problem works or the steps needed to solve it.

Visiting the Key Curriculum Press Publishing booth was also a rewarding experience. Key recently released Geometer's Sketchpad 5.0 so the representatives were busy showcasing all the new features. I think one of the best new features is the ability to draw any random curve on the coordinate-plane and integrate it. This was something I had never seen before and I was astounded at the ability to do this. Another great feature is the program's ability to play sounds associated with various wave functions. This would be a great thing to do with a precalculus or trigonometry class when talking about the trigonometric functions. Although this can be a costly program for a school to purchase, I think it would be a great addition to the geometry, precalculus, or calculus classroom.

The conference was a great learning opportunity for me. I was able to see new ideas that can be used when I teach. I am very excited to begin my teaching.

Lisa Dobson attended the Cleveland conference as a junior and the Nashville conference as a senior. Lisa reflects on her experience.

Due to the way my course work fell in the secondary mathematics education program, when I attended the conference in Cleveland, I hadn't had much experience with teaching methods. Because of this, the majority of my philosophy of mathematics education came from my own experience as a high school student. In my own schooling, class mainly consisted of spiral notebooks filled with notes, homework assignments, and tests. Not only that, but my notes seemed to be exact copies of the lesson in the book. From my experience, mathematics could be enjoyable, but I simply didn't see a way to avoid the daily drone of notes and homework. I had a firm vision of what teaching mathematics should be like from the introductory methods experience; however, I couldn't see how to implement making mathematics more interactive with the unavoidable need to simply memorize and take notes.

Prior to the Cleveland conference, I had the idea that there were two distinct types of mathematics educators: those who valued activity-based lessons and didn't cover all of the required standards; and those who covered the material but did so in an extremely non-engaging fashion. I attended several different talks and workshops while in Cleveland, but there were a few sessions that were more powerful than others. Some of the interesting sessions I attended were "Mathematics in Sports," "Implications of Brain Function Applied to the Teaching of Algebra," and a new and pre-service teacher workshop. However, the most influential was "Have a Foldable Day," presented by Barbra Weidus and Catherine Shulte from Clermont County Educational Services Center. I am now aware of how wrong my prior thinking was. Not only is it possible to mix these two schools of thought, but also, it is being done in mathematics classrooms across the country. By doing activities like making notes more interactive and making lessons more engaging, the hope is to captivate students and show them the importance of the field of mathematics while still meeting state and national standards.

Not only did I learn a lot from the sessions that I had the privilege of attending, but I also gained a lot of knowledge from walking around the vendor booths. There was a large open exhibit hall with booths selling everything from textbooks to t-shirts, to games and technology. Of all the booths and presentations to look at, my personal favorites were the booths that sold various manipulatives. In my own experience, I never had the chance to use many manipulatives and really valued the experience to see how different items could deepen conceptual understanding.

After such an incredible first experience to the professional mathematics education world in 2008, I jumped at the chance to attend the Nashville Regional Conference in 2009. My second conference experience was just as educational

as my first, but I noticed that my focus had shifted from attending a random assortment of sessions (Cleveland), to attending specific talks that would be beneficial for my upcoming student teaching placement. My exposure to the professional world of mathematics education could not have been more exciting than through the 2008 and 2009 NCTM regional conferences. I learned a lot about the field of mathematics education, manipulatives, technology, and simply how to be a better, more engaging educator. The experience was priceless and did a wonderful job at rallying excitement in me as a pre-service teacher. I confidently feel that this opportunity has changed me as a professional and I hope that undergraduates continue to have the chance to create excitement for their future career by being able to attend these conferences.