

Secretary's Report

To be presented Friday, April 7, 2017, at the Ivy Tech Community College
Lawrence campus

The Indiana Mathematical Association of Two-Year-Colleges met Friday, October 7, 2016, at Ivy Tech Community College—Batesville campus. At 10:06 am, President Becky Pohle welcomed 24 members and guests.

Hank Hernandez introduced our first speaker, Dr. Kevin Berkopes, IUPUI. Hank noted that IU received a NSF grant to aid several of the IU campuses to increase the number of STEM graduates, especially with underrepresented groups. IUPUI is specifically working with the Ivy Tech Community College—Indianapolis engineering department to double the number of transfer students.

Dr. Berkopes noted that logistics is one of the main problems regarding connecting with potential students. He told us that the grant has encouraged IU to create a start-up to market the services. Data shows that 60 – 70% of incoming students need developmental coursework, and 80% of these students never transition out of that coursework.

He describe for us three aspects of the work. First is to create smarter placement and optimized remediation. Research shows that placement is massively important in the process of mathematics enabling student success. IU intends to change the culture of placement from 'test' to 'experience.' The system will encourage students to remediate on their own, and take multiple assessments between learning modules. He also told us, as educators, to be pragmatic regarding the likelihood of cheating if no one proctors the exams.

Second, he described the intent to employ the emporium model in the project. There is a negative view of the lecture method of delivery, though the classroom remains the first access to content for many students. The project expects to regularize the work outside of class as a stronger second access point to the content. The Emporium model will use adaptive technology via software, mentors, and tutors. Progress will depend on success on topics, not 4 -5 high stakes exams. The intent is to empower the professors.

Third, the second-access points will be learning centers. They will be campus-vetted learning centers creating academic-centered peer interactions. The

grant will work to hire student mentors and tutors. Professors would work in the learning centers, too.

IU intends to use ALEKS-PPL to do the testing up to 5 times, following remediation activities. It will be set to assess 314 concepts from algebra to calculus I. It provides a visual presentation, and is adaptive and recursive. It will connect with both the course and the learning centers.

Dr. Berkopes shared with us several other entities that provide remediation and mentoring, including *Online Mathematics Academy* and Ball State's Emporium system (which assesses topics in a recursive manner).

He also described information indicating that IUPUI has 60% of its math students using the learning center, with 75,000+ individual visits. He also noted that 'peer' matching of a learning center non-user with regular user of the services had a greater effect on the success of the lower skill level students.

Examining the learning center interactions, the examiners found that empathy was crucial for the tutors and mentors. Finally, in terms of the logistics, 90% of the \$41.50 developmental fee goes to student workers, including the 'virtual' learning center for off-campus students. The tutors get training content, homework, and pedagogy before the semester starts.

President Pohle next introduce Lamar Hester and Brianna Bova Swath from McGraw-Hill.

At 11:40, Becky introduced Jon Oaks, AMATYC Midwest Region Vice President.

He listed several AMATYC activities we should watch for:

Series of webinars from Herb Gross, founding AMATYC president; 10/13 on Numbers; 11/3 on Algebra; 12/1 on Implementing the Vision; 1/18 on 21 ways to Boost an Adjunct. Questions and Concerns to go to AMATYC can contact Jon at any time. To arrange a Traveling Workshop, contact Lisa Feinman at Community College of Baltimore County. To use the 50% off for members use the code MBR50-MW.

We broke for lunch at 12 noon.

At 1:45, Jon Oaks gave a second presentation on using bases other than 10. Base '1' is counting with tally marks. Base 2 is the binary numeration we know. Ternary, base 3, works with units such as 3 teaspoons make a tablespoon and 3 tablespoons make a shot. Then there is the relation that 3 hands

make a foot. With base 4 we find the settings for a telegraph machine, arranging ISDN circuits, and defining a Hilbert Curve. For base 5, look at 4 tally marks with a cross slash or a Mesoamerican abacus; also 5 pennies make a nickel, and 5 nickels make a quarter. Charles XXII of Sweden used base 8 for codes. During the French Revolution, the government considered base 11 as a compromise between base 10 and base 12.

Continuing, the Romans used base 12 for fractional units. John Conway developed the Base 13 Function (related to questions about the intermediate value theorem—I had to look it up). The HP9100AB uses base 14. VoIP uses base 15 for encryption. Chinese units of weight use base 16. So does John Nystrom's tonal system for numeration and measurement. Abraham Lincoln's Gettysburg Address refers to base 20 counting. The Mayan calendar does so, also. Jewish numerology uses base 27. Natural Area Code (instead of longitude and latitude) uses base 30—8KDB PGFD is the location of the room in which we are meeting. Base 32 underlies the University of the Netherlands computing system. WorldCom uses base 36. For paint, ounces and fractions of ounces are arranged using base 48. Bitcoin uses base 58. The Babylonian numeration system uses base 60. Base 64 goes with e-mail encryption.

Finally, using base e would be computationally efficient. Maybe we could consider base π or $\sqrt{2}$. Then, if we used base -2 , negatives would have an even number of digits, while positive numbers would have an odd number of digits. Jon closed by noting that many real world applications use hybrid bases—for example clocks mix base 60 and base 12.

Business Meeting

President Pohle called the business meeting to order at 1:20. Twelve members remained for our business meeting.

Old Business

We again discussed our founding paperwork (as the old Indiana Regional Mathematics Consortium). Our original incorporation was in 1976. In 2010, we proposed updates to the by-laws. The minutes do not record ever voting to accept the changes. If we cannot find record of accepting the changes, we will vote on them in spring 2017.

INMATYC is creating a Google Group. Please sign up.

One member recommended finding a presenter (or more than one) for the topic of Continuing and Changing Technology for a future meeting.

Schedule: Spring 2017 will be April 7 at Ivy Tech-Lawrence campus. Fall 2017 will be October 6 at either Ivy Tech-Central campus or at IUPUI.

We accepted the minutes from April 1, 2016, with one correction.

We accepted the treasurer's report. Our balances are \$1014.97 in checking and \$841.02 in savings.

New Business

The Scholarship Committee asked us to encourage students to apply.

Following the notice that AMATYC will request that future donations to the Hospitality Room be at least \$200, we decided to hold off voting on a new donation until spring 2017.

In spring 2017, we will also vote on whether to adjust the by-laws to have the President-elect/President/Past-president term to be 1 year, 2 years, 1 year in sequence.

We adjourned at 2:06 pm

Board Meeting

President Becky Pohle, Paul Kamber, Luanne Benson-Lender, Ren Simmons, and Ed Gallo remained for an unofficial board meeting. Since it remained unofficial, Secretary Simmons did not keep the minutes.

Respectfully submitted, Renald Simmons, Professor of Mathematics, Vincennes University

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