DMAPT Today

DMAPT Fall 2007 Meetings

Minutes by Laura Ritter—
Troy High School, Troy

Newsletter by Nicole Murawski —
Royal Oak High School, Royal Oak

Our First Meeting—October 3rd, 2006

The first DMAPT meeting of the school year was held at De La Salle Collegiate high school. Stephanie Spencer, who teaches Honors Physics and AP Physics at the school, was our host. In addition to the usual introductions and dues collections, we took a group picture.
Mark Davids, in true science fashion, took some data during the introductions. He totaled the number of years of experience among those present in the group only to find that the ensemble had a total of 474 years of teaching experience! This led to a brief discussion of the history of the DMAPT, which was founded in 1958. In 1984, the group became the first affiliate group to join AAPT.

The call for new officers led to the election of Steve Dickie of Divine Child High School in Dearborn as the new president. Beth Kubitskey of the University of Michigan School of Education was elected as our new vice president. Current officers, Cal Hoeksma (treasurer), Nicole Murawski (newsletter editor) and Laura Ritter (secretary) retained their current positions.

Mark Davids (Grosse Pointe South HS) & Paul Drummond (MISD) discussed the new content curriculum. Both were on the committee for the development of the physics curriculum. Most of the committee members were recommended by MSTA. During the collaboration, members brought in their own ideas and then looked at some national standards (AAAS). The new Michigan standards ended up being closely aligned to national standards. The group tried to write in plain English so that no would change the meaning of the physics.

After the initial writing, each of the science committees shared their work with the other groups. They found that the physics teachers couldn’t do biology; biology teachers couldn’t do the earth science, etc; and went back into revision. The AAPT and MSTA then gave their input. Content was supposed to be both rigorous and relevant, and the curriculum was designed to also apply to physical first or a conceptual physics curriculum.

2000 teachers participated in an external review of the draft. After that, the committees turned their attention to the items with 10 or more comments. Final approval of the standards happened on 10-11-06. The state Board of Education held a public hearing in the Hanna Building in Lansing in the morning before the vote. After approval they sent out the documents to companies to write the multiple choice test for the MME. Exit tests for subjects are scheduled to follow in 2008-09.

The new curriculum document is merely a framework for schools. Designing of the course is up to the district. It’s up to the district to determine what constitutes a credit (Establishing an exit exam is not necessarily required.) District can design their own exit exams but as far as they know, these exams don’t have to be approved by the state. With the new system, students could get the physics credit by passing the exit exam (state’s or district’s) without actually taking the course.

Names of courses and time length of course do not matter when it comes to the credit. Eventually there will be companion documents for the curriculum that may lead to the development of more established units. The issue of earth science is up to the district. Most districts are including it in 8th grade. There is some concern amongst DMAPT members about colleges accepting credit from an 8th grade course. There are no official sequencing recommendations by the committee or the state.

Since the discussion of the new content curriculum was rather long, the shared demonstrations were short. Tim Murphy demonstrated various uses and shared a lab that could be done with ticker tape timers.

After the discussion of content standards, the modeling curriculum developed by researchers at Arizona State University was mentioned. If you are interested in learning about this curriculum and style of teaching, visit http://modeling.asu.edu/Curriculum.

Steve Rea handed out a write up for activities and demos using a magnetic accelerator. Demos included ideas for energy and momentum, magnetic potential energy. Peter Rea of Arbor Scientific gave a magnetic accelerator as a door prize. Peter also showed the group some demonstrations with a Human Dynamics Cart (available at Arbor Scientific for $150).
Steve Dickie talked about the HOBO Depot Flyer software.

Al Gibson handed out free Vernier DVDs, which Vernier will send for free if you go to directly to their website.

Our Next Meeting—November 8th, 2006

The November DMAPT meeting was hosted by the physics department of Wayne State University. Jeff Conn, project director, played an integral role in the organization of the meeting.

After the usual introductions of the attendees, the physics department chair of the university, Ratna Naik, welcomed the group. She expressed a sincere interest in a partnership between her department and high school educators. Dr. Naik shared with the group the university’s concern with students’ general lack of interesting in the sciences. The university is interested in providing more opportunities for high school students. Currently, Wayne State sponsors an AP Physics lecture day in April or May. The physics department is also willing to arrange school visits to laboratories and/or the planetarium.

After Dr. Naik’s introduction, Karur Padmanabhan spoke about the growing concern about the continued certification of physics teachers. Apparently, no one took the exam last October. There was some discussion about what we can do to attract new teachers to teaching the subject of physics. Curriculum was also discussed. Wayne State is applying for a grant from the APS. The hope is high school teachers can apply for a sabbatical to work on best practices for instructional techniques.

Among announcements was that Nobel Prize winner, Eric Cornell, will be conducting a lecture in November, 2008. A possible research opportunity and poster session for high school students are in the works.

Peter Hoffmann, researcher in the field of nanomechanics at Wayne State University, was the featured speaker of the evening. Hoffmann researches fluids at the nanoscale. The nano level is basically defined as anywhere from 10-100 atoms/molecules. Hoffmann’s presentation consisted of a brief overview of nanotechnology and his own research, as well as interesting demos that can be implemented in a high school classroom. One such example was a demonstration in which he showed the group how a ferrofluid behaves differently in a magnetic field. He also explained how everyday household objects such as ketchup, cornstarch and silly putty can be used to demonstrate the behavior of complex fluids. Tomato ketchup, for example, demonstrates the property of thixotropy, which is a kind of time-dependent change in viscosity. Hoffmann also shared some of the current technological applications being developed due to nanoresearch. Shear-thickening body armor is a light-weight type of armor that gets stronger with impact. More about nanotechnology and Hoffmann’s research can be found at http://www.physics.wayne.edu/~hoffmann/.

After the lecture, announcements were made. Wayne State has offered to host a DMAPT meeting annually. They also host AP lectures every year at the university that are intended to help students prepare for AP tests. Wayne State professors prepare four half-hour lectures on topics relevant to the AP exam. The lectures are held during the daytime in the spring before the exams are held. The physics department is looking for input from high school teachers for ideas to improve the sessions.
Steve Dickie (Divine Child High School) shared the opportunity to get up to $10,000 for an invention grant. Teachers can assemble a team of students and apply for the grant in the fall. Over the school year, they develop the invention and present in June. Last year only 56 teams applied for 20 grants! Among the inventions were a tilt sensor for a wheelchair that triggers a GPS signal and Steve’s team’s invention: converting the heat energy from bicycle brakes to electrical energy. More information can be found at http://web.mit.edu/inventeams.

Mark Davids (Grosse Pointe South High School) shared his experience with the Einstein Fellowship. High school teachers take sabbatical and work for the government for one year. It’s a great opportunity to affect change in the political realm of education.

Our Final Fall Meeting—December 12th, 2006

Our December meeting for the DMAPT was hosted by Jim Gell and Steve Rea of Plymouth High School. Many of our Wayne County members were able to attend. After introductions, several demos on forces, energy and momentum were shared.

Steve Dickie (Divine Child High School, Dearborn) started off the demos by showing us a student-built device to demonstrate the conservation of momentum. The device was made out of PVC pipes and a bicycle pump. Tennis balls and plastic cups could be placed at the end of the pipes and the pump used to create an explosion.

Steve Rea (Plymouth High School) shared with the group several demos. He gave the group a handout for a lab that uses a force sensor to measure the frictional force of a block with cork around it on a surface (either flat or inclined plane). The frictional force was then used to calculate the coefficient of friction for the two materials.

In order to demonstrate how the normal force changes at the angle increases on an inclined plane, Steve built a human inclined plane device only describable by picture. Al Gibson was the ill fated volunteer. The group watched in awe as Steve hoisted Al onto the device and risked Al’s life...I mean, tilted Al while observing the measured components to Al’s weight. Do you think we could market this contraption?
Steve also showed the group some safer, more simple inertia demos. He shared how a basic set up of a bowling ball on a wagon can provide a great visual demonstration of inertia concepts. Steve also used a flat board on wheels to demonstrate Newton’s third law.

He pushes the wall (or a partner) while standing on the board. After he is moved away from the wall, he asks the class what pushed him. He also has large, heavy sand bags and tosses the bags off the board, which could demonstrate both momentum and third law concepts.

Finally, Steve sits on a cart and propels himself with a fire extinguisher. All of the demos are fun and exciting ways to supplement physics in a conceptual way and to advertise our programs!

Kathy Ebrahimi spent some time showing the group the LON-CAPA online homework system. Among the features of the site are individualized homework assignments, extensive teacher reports, several options for monitoring student work, and a networking system with other educators using the system at the university level. The LON-CAPA organization holds workshops over the summer at various universities. More information is available at www.lon-capa.org.

In order to demonstrate relative velocity, Walt Krell laid out a large roll of paper on the floor, which connected to a carpet tube with a motor that allowed it to move very slowly. This device models a flowing river and the motor allows the “river” to flow at a constant velocity! It was a great way to visualize the effects that a flowing river will have on a boat crossing the river.

To demonstrate tension, Walt connected magnets to string and challenges his students to find the force to break the magnet. This looked to be yet another marketable product from the DMAPT group!

Walt is also our webmaster and showed us the progress he has made with the site.

Everyone is encouraged to visit www.dmaptphysics.com.

Ramon Torres (University of Michigan) constructed a simple motor consisting of a battery, wire, magnet and screw. He showed how if the wire touches the side of the screw, it spins. Ramon challenged the group to figure out why and said that he’ll share his explanation at the next meeting (which he is hosting).
Vanessa Morse (Melvindale High School) showed the group a quick inertia demo. A dollar bill was placed between 4 quarters and a pop bottle. The bill was removed by a very quick tap to it.

Mark Davids (Grosse Pointe South High School) shared several handouts based on PSSC lessons. He showed us a simple demo for projectile motion with golf balls. From the same height, he dropped the golf ball in one hand and tossed the other golf ball horizontally simultaneously. Both balls hit the ground at the same time!

As always, a special thanks to Walter Krell and Louie Miller for their fantastic action photography!!!

Upcoming Meetings and Events

The next DMAPT meeting will be Saturday, February 3, 2007 at the University of Michigan. The meeting will be hosted by Ramon Torres and sponsored by the FOCUS center at the university. FOCUS stands for Frontiers in Optical Coherent and Ultrafast Science. The topic of the day will be the teaching of optics in high school. The meeting will begin at 9am and end at 3:30pm with a break for lunch in between. The meeting is free; all expenses will be covered by the sponsor. Registration is required at the website below. There will be free CEU units for the first 20 folks that register. There will be lots of goodies available for those attending the workshop. We will also be offering a free 6 month membership to AAPT to those of you that are have not been members in the past 2 years. For more information, and to sign up, go to: http://focuspfc.physics.lsa.umich.edu/outreach/DMAPT.htm

Saturday Morning Physics at the University of Michigan starts the following weekend on February 10, 2007. The topic for the first series will be Weapons of Mass Destruction. More information can be found at the University of Michigan website: http://www.lsa.umich.edu/physics.

A joint meeting of the MIAAPT and MSTA will be held March 15-17, 2007 in Grand Rapids. Presentations for physics will be on Friday. The MIAAPT meeting is Saturday.

On April 19, 2007, Mark Davids will host the final DMAPT meeting for the 2006-07 school year at Grosse Pointe South High School. The meeting will include a make-and- take relating to the topics of electricity and magnetism.

October 18-20, 2007, NSTA will host a North/Midwestern area conference in Detroit. More information to come.

A national meeting of Sigma Xi (publisher of American Scientist) will be in Detroit this year on November 2-5. There will be an essay contest for high school students. Al Gibson will resend the information about it to members.

AAPT will potentially conduct its 2009 summer meeting in Ann Arbor. More to come.

This coming year will be the 50th anniversary of the DMAPT. We are still working on possible ideas for meetings next year. We are interested in seeking out former or retired members.

This past fall was a busy time for physics teachers. The MIAAPT held a meeting on October 14, 2006 for which Eugenia Etkina of Rutgers University was the Keynote speaker. On October 21, 2006, Lawrence Tech hosted the MDSTA. The YES Expo, sponsored by Michigan Tech was held on November 2, 2006. Bill Nye presented at this free expo held downtown at Ford Field.
**Al’s Corner—From the Desk of Al Gibson**

This month we are bringing you some great deals.

Deal of the Decade: Free 6-month membership in AAPT. If you are a member of the MI section of AAPT, MIAAPT, and are not currently a member of AAPT, you can get a free membership to AAPT. The free membership gives you online access to either *The Physics Teacher* (TPT) or the *American Journal of Physics* (AJP) for 6 months. After that time you will be offered a chance to sign up for one year at half price. During the half price year you will receive the print journal of your choice. This is only for those that have not been members of AAPT within the last few years. It may be possible to sign up for MIAAPT online by the time you read this. If so there will be a link that will take you to the AAPT website for membership info.

AAPT is undergoing lots of changes with our New Executive Officer Toufic Hakim. Bernie Khoury is now serving as EO Emeritus. Please check the website, www.aapt.org for reports on the changes as well as getting up to date info on various contests for high school students and opportunities for you. The Photo Contest and the Video Contest have deadlines in April or May.

MIAAPT is involved in taking the Michigan Content Expectations and offering suggestions on how you might break them up into 3-week segments. Chris Deyo, Kathy Mirakovits, Drew Isolta, Mike Elvele and I will spend one day to break the Expectations into 3-week units. The reason for the 3-week units is so that folks can shuffle the units if needed due to equipment issues or other reasons. Our work will provide guidelines and is not meant to lock anyone into a particular path. Another group will probably do sample lesson plans sometime later in the year. The request to do this came in just over a week ago and the deadline is Feb 15th.

MIAAPT will be in Grand Rapids on Saturday March 17th. GR Community College will host the meeting. Lots of good sessions and a NASA workshop with free goodies will be offered.

MSTA will be in GR Thursday, Friday and Saturday of the same week. Head over and enjoy some of both.

New Magazine from AAPT - Check out Interactions the replacement for the Announcer at http://www.aapt.org/Publications/interactions.cfm

Physics First - AAPT’s Physics First document is available as a PDF file or you can request print copies for anyone that would like to know more about the Physics First movement. The document is available at www.aapt.org, about half way down the page. Many of us learned about Physics First a few years back when Mark Davids brought Nobel Laureate Leon Ledermann to Grosse Pointe. Leon describe the work he was doing in the Chicago area relative to changing the order of high school science courses.

**Haven’t been to a DMAPT meeting in a while?** This is just a friendly reminder of what DMAPT has to offer:

- Great professional development opportunities
- Fantastic relationships with other area Physics teachers and professors
- Great activity and demonstration ideas that you can use immediately in the classroom
- Information on upcoming Physics related events
- A place to ask those pesky unresolved Physics questions
- And, might I say, the best door prizes in town!
- The list could go on and on…..

**Not on our Mailing List?** Contact Al Gibson at: gibson@oakland.edu

**Suggestions?** If you have any ideas or suggestions for future newsletters, please email them to Nicole Murawski at: murawskin@royaloakschools.com.