**Multi Department Activities**

Science Express-The Chemistry, Biological Sciences, Earth and Atmospheric and Planetary Sciences, and Physics Departments of the Purdue College of Science deliver research-grade instruments to high schools in 17 Indiana counties. Numbers for the month of December are as follows:

Teachers/Classrooms Visited – 41

Student/Instrument Interactions - 3167

**Biology Outreach**

1.) High School Biology 3-Dimensional Learning with Carolina. Secured a 20% discount on order of Carolina Biological Kits 3D labs for a Weekend workshop for teachers to introduce the 3-D learning approach in Biology. This workshop will demonstrate to teachers the of use Science and Engineering practices, Disciplinary Core ideas, and Crosscutting Concepts that serve as a model for teaching/learning of Biology. This workshop will serve approximately 15 teachers.

2.) Community Outreach to Briarwood Lafayette.  Student activity to Briarwood students. Seven (7) Middle school students, one (1) teacher and three (3) parents attended. In addition, discussed and planned a summer activity program with the director of The Briarwood Project, Pauline Chen. A series of educational activity projects will take place over the summer months.

3.) Grand Parents University: Met with the planning group to discuss and plan Grand Parents University. This University planned program takes place on June 27 thru 28th, 2019. Biology Outreach will present “DNA The molecule of life”. A hands-on lab activity for participants in the program.

4.) Summer Pre-Professional Experience: Attended Planning meeting of SMHS pre-med/ Exploring Majors program to be held on campus July 28 – Friday August 2. 2019. Biology Outreach will participate in this new University Program and present a session.

5.) Began Planning for Summer 2019 SBE (Summer Biology Experience) program. This program for HS (9th and 10th grade) Biology students, takes place June 20th – June 29th, 2019.

**Physics Outreach**

Faculty Broader Impact and Teacher PD

Recruited principals from 5 middle school to support an upcoming NSF grant proposal for teacher PD.

ICP Lessons

Sederberg, along with Zach Grigsby, met with teacher Christian Hoerner to brainstorm ideas for Science Express ICP lessons on the topic of energy,

Faculty support

Met with Gabor Csathy to outline ideas for broader impact in a grant proposal. Met with Marc Caffee to create an orientation lesson for student visits to PRIME Lab. The basis of the lesson will be electromagnetic interactions and the operation of the mass spectrometers. These will receive ongoing use for student PRIME Lab tours.

Classroom Presentation

Co-taught Getting a Grip on LIGO with Debbie Beck at Jefferson High School, using our new interferometers.

Physics on the Road

Outreach presented the Liquid Nitrogen Cryogenic Show to students at Kankakee Valley Middle School. Five grad students participated in the presentation.

Physics Inside Out

Visited 8 area middle school, delivered flyers and spoke to students to recruit for PIO.

Study Abroad

Consulted with contacts in Singapore for a summer 2020 study abroad. Sederberg and Bryan will travel to Singapore in early August to meet with school contacts and university personnel.

**Earth, Atmospheric, and Planetary Sciences Outreach**

* + *Goal 1:* ***Support for K-12 science and mathematics educators***
    - Teacher Professional Development
      * Worked on setting up summer teacher professional developments.
    - Equipment loan programs
      * We have equipment and labs going out to schools that are part of the Science Express program.
    - Getting information out
      * We have a Facebook for EAPS Outreach <https://www.facebook.com/EAPS.out/>
    - Teacher Resources:
      * We have an EAPS K-12 Outreach Pinterest page to help teachers find resources in our content area.
  + *Goal 2:****Create and facilitate programs that develop scientifically literate K-12 students***
    - Student groups visited campus
      * May 1, helped with atmospheric chemistry lessons for students from Covington High School visiting campus.
      * May 8, 2nd grade GT Program visited the department and did hands-on activities.
    - School /event visits
      * May 9, Field day for Lafayette Schools (LSC) and Tippecanoe County Schools (TSC) ran by the Tippecanoe County Partnership for Water Quality. We ran a station doing activities for students as they rotated through.
      * May 16, Co-facilitated GLOBE Biomentary lessons at Warren Central Elementary
  + *Goal 3:****Create opportunities for broader impact***
    - May 28, Participated in Strategic Planning event at Imagination Station
    - Met with **faculty and staff** from around campus collaborating on a STEM Summer Professional Development for educators.
    - Attended meetings for the **GLOBE U.S. Partner Forum**. Steven Smith (EAPS K-12 Outreach Coordinator) is the U.S. At Large Representative and Chair of the forum.
    - Collaborating with **Lafayette Jefferson High Schoo**l to offer a Technology workshop for teachers summer 2019 as part of the Title 4 grant that we co-wrote with them.
    - Collaborating with **Purdue Conferences** to offer Grandparents University summer 2019.
    - Steven Smith is serving on the advisory board for **National Geographic Education** for Indiana

Additional outreach efforts this month included:

* Attended NWS Storm Spotter Training
* Spent time organizing outreach lab and storage areas.

**Chemistry Outreach**

* **Professional Development and Support for K-12 Educators**
  + Traveled to Twin Lakes High School and helped chemistry teacher Rebecca Brayfield teach a lab to her Chemistry I students. The lab utilized gas chromatographs from Science Express.
  + Coordinated details with Gayle Gernand for a presentation I will be co-presenting in June at Pendleton Heights Middle School for a Summer of ELearning conference: Literacy in a STEM World. This conference will serve approximately 350 K-12 teachers.
  + Participated in an exit interview with TPI-US on the Woodrow Wilson Teaching Fellowship program.
  + Held a planning meeting for everyone that will be involved with a teacher workshop that is being planned for this July: Integrating STEM in the Environment.
  + Communicated with Indiana elementary teachers regarding two Professional Development sessions that will be offered at the Indianapolis Children’s Museum in July.
* **Programs to Develop Scientifically Literate K-12 Students**
  + Hosted students from Covington High School on campus. Students met with Professor Corey Thompson and completed a tour of his lab and various activities related to solid-state chemistry. Additionally, students completed several activities related to Atmospheric Chemistry.
  + Co-taught sessions on adhesion and cohesion during the Tippecanoe County Partnership for Water Quality Field Day for Tippecanoe County 5th grade students.
  + Taught a GLOBE Biometry lesson with Professor Brooke Max and Steven Smith (EAPS Outreach), along with a Weather Climate Lockbox lesson to 5th grade students at Warren Central Elementary School.
* **Opportunities for Broader Impact**
  + Participated with the Global Learning and Observations to Benefit the Environment (GLOBE) 2019 North American Regional Meeting (NARM) planning committee to help organize the meeting scheduled for this coming October at the University of California, Berkeley.
  + Collaborated with Professor Kavita Shah on her NSF grant proposal.
  + Met with Wei Zhang from Professor Gaurav Chopra’s group to discuss tutorials for teachers that have been made for the MINT program offered on the VR for Science Express, and to update the version of MINT on the Science Express VR computer.
  + Received a College of Science Staff Professional Development Fund Award to attend the Fall 2019 North American Regional Meeting at the University of California, Berkeley.
  + Met with Natasha Harris and Connie Brophy to discuss how to set up and use the Weather and Climate Lockbox activity with both Science Scape and IBE Youth Summit events this summer.
  + Attended a National Weather Service (NWS) storm spotter training session with Purdue University alum Sam Lashley (NWS forecaster) and completed the SKYWARN Spotter Training course (online MetEd Course) to become registered with the NWS as an official storm spotter.
  + Met with Phil Sands and Steven Smith to discuss the potential use of Arduino weather stations for a future teacher professional development opportunity.

**Computer Science Outreach**

Early in May I attended a planning meeting for the CS for Indiana group down in Center Grove, where partners from Nextech, PLTW, the Indiana DOE, and Indiana University joined together to strategize for our upcoming teacher professional development work. This group meets virtually once a month and in person once a semester to discuss our top-level strategy as an ECEP state that has now become one of only three states to achieve all of the policy requirements set forth by Code.org to make CS a fundamental part of K-12 education. You can read more about that at the link below, and other efforts through our CS for IN website (<https://www.csforin.org/>).

<https://code.org/advocacy/state-facts/IN.pdf>

As part of the department request to consolidate / refocus the activity of student groups, I spoke with members of CSWN about their interest in running a women’s-only hackathon for high school students in the Fall of 2019. I will continue to advise this group and help all of our student groups to coordinate their events in a way that positively reflects the department.

Outside of these meetings, most of my month was spent prepping for this year’s CS Summer Camp, which will begin on June 16th. We have a full group of 40 high school and middle school students and will look at problem solving and programming using childhood board games and card games as a motivator. Should be a fun experience for our kids, and we’ve come up with some good problems for the kids to tackle as they learn the basics of programming in Python. In addition, we have a group of 8-9 students coming from 21st Century Charter School in Gary, IN on scholarship. These kids are excellent students and their teacher, Lindie Jackson, has advocated for the opportunity to send them to camp when they would not have otherwise been able to attend.