**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 – 53

Student/Instrument Interactions - 3320

**Biology Outreach**

1). Attended inaugural meeting of Purdue university’s Summer Pre-Professional Experience for High school students. The first offering of the 2019 summer program entitled “Exploring University Majors: planning for Medical, Veterinary and Other Professional Schools after College” will take place July 28 – August 2nd, 2019. Biology Outreach will offer a class session in this 1week program. The class session will involve a hands-on lab activity on simulated genetic screening, and a discussion on Ethics in human genetics information and Bio-medical research.

2).Community Outreach; met with local middle school students (Briarwood) in an information session for participation in the upcoming Regional Lafayette Science and engineering Fair. Opportunities for mentoring and assisting students were outlined.

3). NMSI AP-Biology Presentation: Presented a National Math and Science Initiative(NMSI) AP-Biology student study session to 25 students at Bellevue west High School, Bellevue, Nebraska. AP Biology curricular topics covered in this study session were, 1) DNA/RNA Function and 2) Genetics and Cell Communication.

**Physics Outreach**

Faculty Broader Impact

Outreach Coordinator Dave Sederberg worked with faculty member Matthew Lister to create a lesson for Saturday Morning Astrophysics on Radio Astronomy. The goal is to create an optics lesson kit that will be made available to teachers in Science Express.

Work was also begun with faculty member Andrew Mugler for an activity to be presented at the 2019 HASTI conference.

Service Learning

Coordinator Sederberg is working with service learning students at BIDC with on-going design and 3D printing projects for SMAP and Science Express.

Sederberg began work with Debbie Beck, high school physics teacher, on service learning projects for the spring semester. Debbie is enrolled in the graduate level service learning course.

AAPT

Outreach Coordinator David Sederberg presented Physics and Astronomy Outreach programs to the winter meeting of the American Association of Physics Teachers in Houston Texas. The focus of the presentation was Physics Inside Out and Saturday Morning Astrophysics.

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

EAPS K-12 Outreach worked to achieve the 3 goals of the CoS K-12 Outreach this past month. Below are the events and projects that the EAPS K-12 Outreach Coordinator worked on in the month of January, 2019

**Goal 1: Support for K-12 science and mathematics educators**

*Teacher Professional development*

A Science Express new teacher training was help on campus.

Co-presented with Sarah Nern from Chemistry outreach Using Lockboxes to Engage Students at the Indiana STEM conference

Modeled a lesson for a preservice and in-service teacher teaching the concept of density at Tecumseh Jr. High, with Sarah Nern from Chemistry outreach.

Working with conferences to organize a STEM professional development for high school and middle school teachers in July of 2019.

Collaborating with the Indianapolis Children's’ Museum to offer a STEM professional development for elementary teachers in July of 2019

Collaborating with the Indiana Department of Education to offer a number of teacher professional developments for Inquiry in the Classroom.

Collaborating with Lafayette Jefferson High School to offer a Technology workshop for teachers summer 2019

Collaborating with Purdue University Fort Wayne to offer a middle school teacher workshop in the summer of 2019.

*Equipment loan programs*

Our participation is Science Express is proving to be beneficial in that we have high school science teachers.

We have small equipment that we loan out to faculty and students. It is mostly used by pre-service classes and some local in-service teachers.

Getting information out

We publish a monthly newsletter that goes out to nearly 500 educators. The January newsletters theme was STEM in the Classroom.

We have Facebook accounts for both EAPS Outreach and the Science Express program

<https://www.facebook.com/EAPS.out/>

<https://www.facebook.com/PurdueSE/>

*Teacher Resources:*

We have a EAPS K-12 Outreach Pinterest page to help teachers find resources in our content area.

Worked with American Geoscience Institute (AGI) to obtain a pallet of past Earth science Week Toolkits to provide to Indiana teachers for free.

**Goal 2: Create and facilitate programs that develop scientifically literate K-12 students**

*Student groups visited campus*

Both of the scheduled AP Friday events were canceled due to weather related school closures this month.

We have been working on preparing the AP Friday events that we have lined up this semester.

Collaborating with Purdue Conferences to offer Grandparents University summer 2019.

*School /event visits*

Taught Density lesson at Tecumseh Jr. High.

**Goal3: Create opportunities for broader impact**

Met with faculty and staff from around campus collaborating on a STEM Summer Professional Development for educators.

Working with faculty to present at various AP Friday events.

Attended planning meetings as a committee member for organizing the GLOBE North American Regional Meeting which will be held at NASA Langley.

Attended meetings for the GLOBE U.S. Partner Forum.

Steven Smith (EAPS K-12 Outreach Coordinator) is the U.S. At Large Representative.

Collaborating with the Indianapolis Children’s’ Museum to offer a STEM professional development for elementary teachers in July of 2019

Collaborating with the Indiana Department of Education to offer a number of teacher professional developments for Inquiry in the Classroom.

Collaborating with Lafayette Jefferson High School to offer a Technology workshop for teacher’s summer 2019 as part of the Title 4 grant that we co-wrote with them.

Working with the Indiana STEM Education Taskforce to promote STEM education in Indiana.

Collaborating with Purdue Conferences to offer Grandparents University summer 2019.

Collaborating with Clinton County Healthy Communities on an outdoor educational area.

Collaborating with Tom Ratkus from EAPS to update the augmented reality sandbox that we built for outreach.

Collaborating with Purdue University Fort Wayne to offer a middle school teacher workshop in the summer of 2019.

Steven Smith is serving on the advisory board for National Geographic Education for Indiana

**Funding for January 2019:**

Co-drafted a proposal for the Duke Foundation

Co-drafted a proposal for Motorola

Co-drafted a proposal for the Toshiba Foundation

*Additional outreach efforts this month included:*  
Reorganizing the Outreach and Education lab (HAPM 2244) and adding glassware and other supplies to the lab.

Organizing materials in the outreach lab (2270) and storing items not needed until summer in the departmental storage unit.

Taking a National Geographic Educator certification course.

**Chemistry Outreach**

* **Outreach for Indiana K-12 Educators**
  + Met with Dr. Amy Rauch, Director of STEM for the Indiana Department of Education, along with Steven Smith and Bill Bayley to discuss options for summer inquiry training for teachers.
  + Co-presented with Steven Smith at the 4th Annual Indiana STEM Education Conference: Middle and High School Lockbox Activity – Elements of the Earth and Sky.
  + Worked with Steven Smith and Bill Bayley to submit grant proposals:
    - Motorola for funding of a summer 2020 STEM professional development for teachers
    - Duke Energy for funding development of labs to offer Integrated Chemistry Physics teachers through Science Express
  + Met with Ethan Kingery (Purdue Conferences) and Steven Smith to set up a registration link for summer 2019 STEM professional development for teachers.
  + Modeled a lesson for a pre-service and in-service teacher teaching the concept of density at Tecumseh Middle School, with Steven Smith from Earth, Atmospheric and Planetary Sciences outreach.
  + Helped develop the Purdue College of Science K-12 Outreach January newsletter
    - Theme: STEM in the Classroom
    - Newsletter currently has over 445 subscribers
* **Faculty collaborations**
  + Participated with the GLOBE 2019 North American Regional Meeting (NARM) planning committee to help organize the meeting scheduled at NASA Langley in early March.
  + Began working on an Educator Certification course through National Geographic.
  + Met with Gina Malczewski to discuss Purdue as a host to remote broadcast sessions for the 50th Central Regional ACS meeting held in Midland, MI. The anticipated audience would be for educators near central Indiana.
  + Participated in meeting for 2019 Summer Pre-Professional Experience to get more information for chemistry faculty that might be interested in participating.
  + Working with Purdue Conferences to organize Grandparents University during the summer 2019.
* **Science Express Labs and Instrumentation**
  + Consulted with Laura Feshbach (Summer Science Program) and Zach Grigsby on providing information to Science Express participants about this exciting opportunity for high school students entering their senior year.
  + Met with Ana Aghili from College of Veterinary Medicine to discuss support for her broader impact research project entitled: “Assessment of physical compatibility of injectable enrofloxacin with commonly used intravenous fluids and drugs during simulated Y-port administration”.

Hosted new teacher training for Vernier equipment at Purdue.

**Computer Science Outreach**

The major event in December was CS Education Week, during which we engaged in two major efforts. First, we ran our 6th annual CS Ed Week Programming Challenge. This consists of three problems designed to challenge first year computer science students from a problem solving perspective. We had entries from all across the state, involving 10 schools and about 40 total kids. The winners get some Purdue swag, and we try to give feedback to all of the students who entered the competition. Results will be up on the CS Outreach web page this week once I get a chance to notify the winners.

During the same week, my students and I visited three Indianapolis area high schools and did a series of activities aimed at encouraging students in computing. At Westfield High School, we ran some hands-on CS activities for students in both CS and web design courses. At Hamilton Southeastern High School, we did a series of Q&A sessions so that students could learn more about Purdue CS. At Carmel High School, we helped the Carmel students run a number of stations for elementary students who were visiting for an “Hour of Code”. Our students really represented Purdue CS well this week, and I got lots of great feedback from the teachers at each school.

The MAGIC mentors wrapped up their first semester successfully. Our McCutcheon students will be presenting an app that they are designing at an event this month at the Indiana State House. The other two schools saw good progress on their own projects, and our only real negative was that we lost our club at West Lafayette due to low attendance. We’re working to replace that school with Lafayette Sunnyside Middle School and should be able to start there this month.