

The Investigators



Oklahoma Research Day

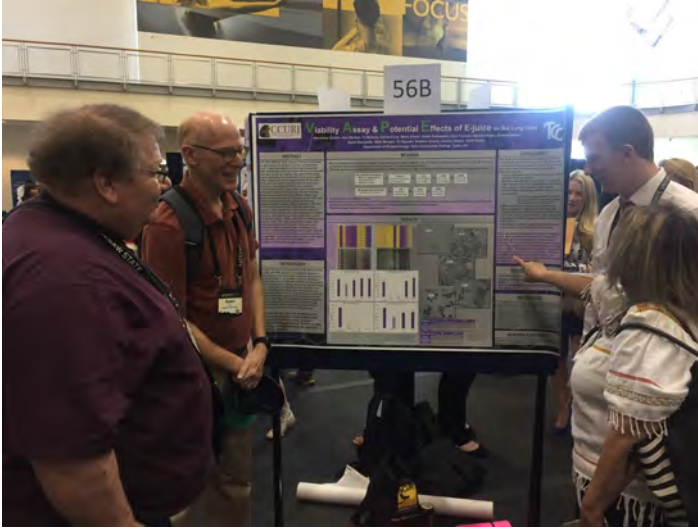
On March 8th, 2019, students were able to present their work at Southwestern Oklahoma State University during Oklahoma Research Day. Abstracts had to be submitted and registrations complete by Thursday, January 31, 2019. TCC and the Engaged Learning Division offered cushy bus travel for students and faculty. Thirty-three faculty and students attended with Mark Swanson, Stacia Sarwinski, Gay Phillips, Bill Briscoe, and Diana Spencer providing the faculty/representative sponsorship.

Research Externship Applications Workshops for Students (REACH)

In addition to the workshops held in the Fall of 2018, The REACH workshops were held again in the spring semester to ensure that all students were able to hear the compiled info regarding internships on a variety of disciplines. The workshops were held on the SE Campus, Room 8244, on Wednesday, January 24, 2019 (2:30—3:30pm) and the Metro Campus Room 500 on January 22, 2019 (2:30-3:30pm). Assistance was provided on student cover letters for applications. Students brought their applications and received good advice on the contents.

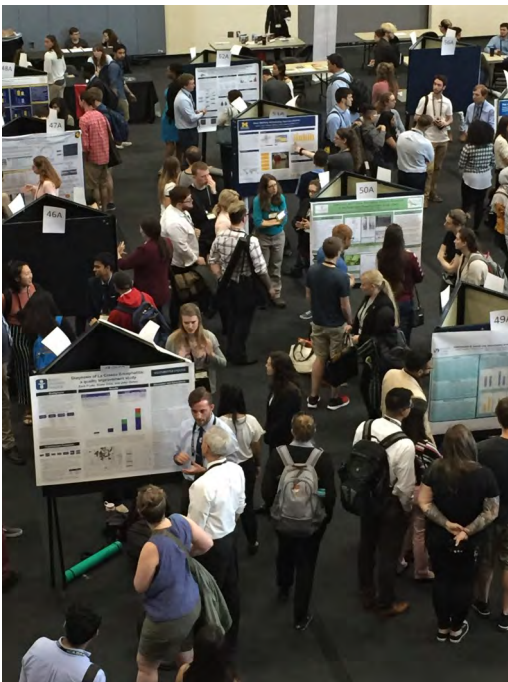


NCUR: Kennesaw: 2019



Research IS Teaching!

SEArCHH & ASPIRE Spring 2019 Meeting Highlights



The SEArCHH & ASPIRE learning community met on January 25, February 15, March 29, April 11 and April 26. While the group always communicates the most recent events in undergraduate research at TCC and discusses avenues of research internal and external to their classrooms several very special discussions were also shared. Jacalyn Swicegood shared her Statistics Course Research that provides a service for TCC Academic Affairs. Specific quotes and details were shared regarding the recent CUR publication of *Mentoring through the Transitions: Voices on the Verge*. Heather Wilburn shared her research regarding her final project in her philosophy class that came from her OACC GIFT Award *Thinking Outside the Final Exam Block*. Kristen Marangoni shared how her Service Learning project merged into a research project with the goal of avoiding the stigma of getting students to use the food pantry. One lesson learned was how important it is for the faculty to let the community partner know the positive impact they are having on the students as well. The project has grown to include multiple faculty. The learning community worked on a variety of workshops and conferences for both students and faculty (found throughout this publication) and developed the *Consistent Innovator and Practitioner of Undergraduate Research and Scholarly Activities* document. The officers of the Student Club of Undergraduate Research and Scholarly Activities presented to the community. New pathways of communication are being forged!



Caption describing picture or graphic

TCC Faculty presented at the 5th Annual Sustainability Conference

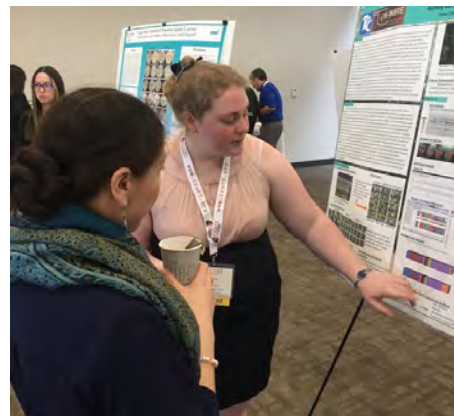
The TCC Research and Scholarly Activities Group submitted a TCC Faculty Panel to present *TCC Research and Scholarly Activities Professional Learning and Interdisciplinary Approaches* during the 5th Annual Sustainability Conference. Diana Spencer, Mona Easterling, Rob Katz, Mary Phillips, Mark Swanson, Neil Enis, and Gay Phillips presented at the Metro Campus Boardroom on Wednesday, February 20, 2019.

Stayonference

During the TCC Stayonference: Forward Thinking on March 1, 2019 on the West Campus, Diana Spencer, Kristen Marangoni, and Douglas Price presented *High Impact Practices: Faculty Opportunities at TCC*. The talk was well received by approximately 20 participants.

Student Ashley Kennedy Presents in Washington, D.C.

Ashley Kennedy traveled to Washington, D. C. to present at the CCURI Community College Posters on the Hill and to discuss with the Oklahoma Congressional members the need for undergraduate research funding. Ashley's travel was funded by CCURI, and her research was funded by a grant awarded through the OK INBRE SMART program. Ashley's poster was *The Bacterial Diversity Found in the Rhizosphere Between Soil Samples Taken From Ecological Niches Using 16s rRNA Genes*, and the presentation occurred in the Hart Senate Building on May 2, 2019. Ashley was accompanied by Dr. Diana Spencer.



Ashley describes her work

Faculty Members Share Examples of Interdisciplinary Work: Mona Easterling and Gay Phillips—500 Cities

The spring of 2019 gave Mona Easterling and Gay Phillips the opportunity to work on a collaborative plan that was developed in the fall of 2018. The sections were selected based on corresponding meeting times. Dr. Gay Phillips brought her students from Aging, Death, and Dying to present a poster session to the Mona Easterling's Biology for Non-Majors section. These non-major students had presented their research to one another earlier in the semester. The professors emphasized the process of peer-review and the overlap of content in the two courses. This was a positive experience for the students at NEC who do not have the opportunity for poster week on campus.

The common denominator for these two classes was the use of the same data sets for their research and analysis, i.e. the Centers for Disease Control 500 Cities, the U.S. Census, and Tulsa City-County Health Department data. Students were able to see how secondary data can tell an important story about conditions locally, often regardless of the research question. Without prior knowledge, two students, one from each of the two classes focused on Tobacco Use – with unique research questions relevant to their course learning outcomes. Several students stated that having the opportunity to use data focused in their city, zip code, or state made their poster presentations of that data more realistic, personal, and important in terms of sharing with others outside their class. By presenting to another class they took their analysis and findings more seriously.

SEArCHH & ASPIRE Learning Community

The TCC SEArCHH & ASPIRE Learning Community meets each month and explores options to develop quality research activities for students. The research often involves interdisciplinary collaborations within TCC. The teamwork of the community is professional, affirming, and productive. Please find within this newsletter the guidelines prepared by the group: *Consistent Innovator and Practitioner of Undergraduate Research and Scholarly Activities*. The minutes, slides, newsletters, and activity schedules are printed on the TCC Engaged Learning Website under the term “Undergraduate Research.”

Known Summer 2019 Student Research Internships: Congratulations to students receiving paid student internships for the summer of 2019! (PART I)

Student **Max Bode** and Dr. Dusti Sloan were awarded an OK INBRE SMarT grant to investigate the development of a budget-friendly PCR protocol for identification of the “taster” gene.

Haley Merrick is the 2019 NASA JPL intern. She will be studying sample handling, extraction, and the detection of inorganic ionic species as well as bulk conductivity, pH and redox potential while residing at JPL in California.

Kaveon Smith is headed to the University of Arizona (2019) to research with the L'Space program in July of 2019. He participated in NASA Community College Aerospace Program (NCAS) and was selected to

participate in at Stennis NASA Space Center (June 2019).

Ashley Kennedy will be attending the University of Pittsburgh Medical College in Pittsburgh, Pennsylvania for a paid Regenerative Medicine Internship that will last eight weeks during the summer of 2019. She is waiting to receive her specific placement.



Community College Undergraduate Research Initiative (CCURI) Sustainability Efforts

Diana attended a CCURI Meeting at the Howard Hughes Medical Institute in Chevy Chase, MD from April 30 to May 2, 2019. The CCURI grant is scheduled to close in August of 2019. The goal of the meeting was to study CCU-

RI Sustainability: Questions and Answers. And the final objective was to complete the meetings with Value Proposition Statements with a look to the scenarios of sustainability for the future. Much progress was made with par-

ticipants from CUNY Undergraduate Research, Station1 (MIT), CCURI CoPI's, Bio-Rad, personnel from HHMI, the NSF Program Officer, a previous Program Officer, and the CCURI PI and Project Director. MANY TCC students and faculty have benefited from the workshops and instruments provided by the national CCURI network, and we would like to see those opportunities continued.



CCURI NSF Team in D.C.

Faculty Members Share Examples of Interdisciplinary Work

Rob Katz and Heidi Rigert—Music Theory, History, and Literature

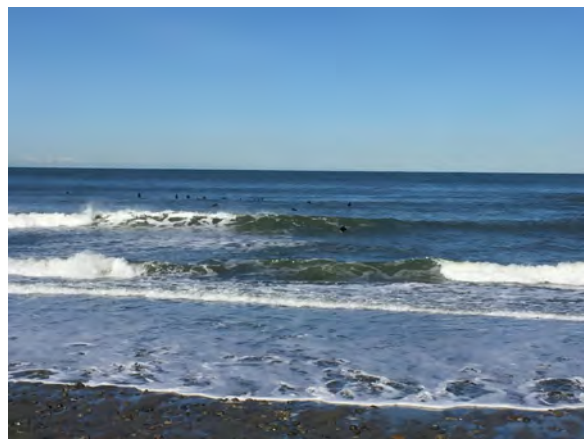
Over the past several years Heidi Rigert and Rob Katz have collaborated on a research-based project involving students enrolled concurrently in two courses taught during the spring semester at TCC. Heidi's class is the final course in a 4-semester sequence in Music Theory. Rob's class is a course in Music History and Literature with a theory pre-requisite that limits enrollment mainly to music students in the 4th semester Music Theory class. This semester, as in previous years, we made adjustments to the research component intended to maximize both benefit and success in the research component. Students are asked to undertake a broad research approach to inquiry about a specific musical work. Previously students worked independently and on musical works of their choice with the goal of producing a single written research project and an in-class presentation. This year we included several important modifications to the process that we believe have greatly improved the level of student work and its successful completion. The added/changed elements to this year's project were:

Students chose from a list of preselected musical works to ensure adequate research resources available on each topic; Students were asked to work in small groups of 3 to make their work collaborative and allowing them to share with one another the findings of their research and investigation; The assignment was divided into three separate, shorter components to be submitted by each student in each group throughout the semester. The three components engaged elements of both the Music Theory and Music History classes (historical, analytical, and technical) creating a holistic synergy between the different classes in the music major course sequence.

The results proved overall promising resulting in better research, writing, and understanding on the part of students. Several shorter writing assignments seemed less intimidating and overwhelming to the students. Their work was more focused and purposefully deliberate and they demonstrated a greater degree of interdisciplinary understanding as a result of the changes we made to the project. We plan to continue with this "capstone" project in future semesters making additional changes as seem appropriate, such as modifications to the variety of types and time periods of musical works to be studied, and developing more helpful strategies to engage in the often off-putting process of research through authoritative sources and databases. We have also worked with designated librarian liaisons to the School of Performing Arts and the SE Campus writing center.

Developing and Supporting Undergraduate Research Experiences Consultancy

The NIH Bridges Program with Steven Weinstein from San Francisco State University hosted three community colleges and was funded by the NIH and the Council on Undergraduate Research on February 22, 2019 to February 23, 2019 at Skyline College. The purpose of the workshop was to develop undergraduate research opportunities at each of the three community colleges. Diana Spencer worked with a colleague, Mary Farwell, Director of Undergraduate Research at East Carolina University, to develop the 1.25 day program for the participants. Spencer's talks included: *Tools and Best Practices of Undergraduate Research*; *Collaborations in Undergraduate Research*; *Nuts and Bolts of Introductory Poster Production*. The workshop was well received by the participants and they completed plans for their community colleges to increase undergraduate research opportunities. Diana and Mary enjoyed working with the receptive faculty and the travel on the Pacific Ocean front was fantastic!



Known Summer 2019 Student Research Internships: Congratulations to students receiving paid student internships for the summer of 2019! (PART II)

Three of our students received Tulsa Area Bioscience Education and Researchers Consortium (TABERC) internships. The students are:

Sana Ahmed to work with Dr. Haley O'Brien at OSU/CHS

Garrett Harper to work with Dr. Franklin Champlin at OSU/CHS

Tri Nguyen to work with Dr. Gerwald Koehler at OSU/CHS

Also six TCC students were awarded the OK INBRE Summer Internships. The students are:

Alexander Benton in the lab of Dr. David Wallace at OSU/CHS

Carlos Cuza in the lab of Dr. Randall Davis at OSU/CHS

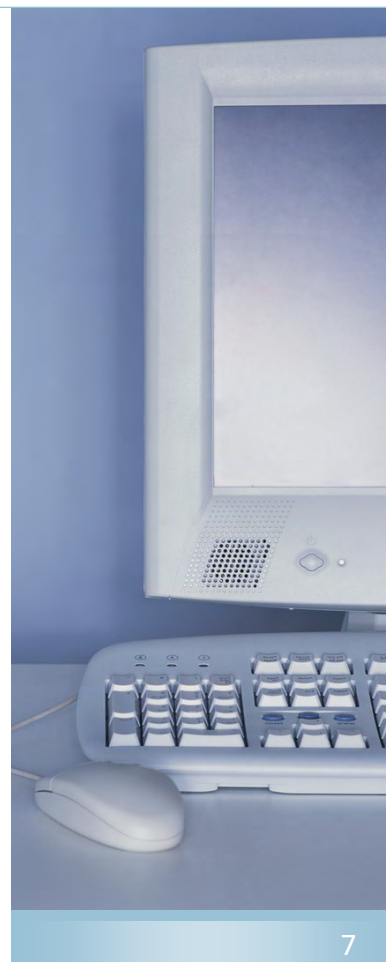
Kayla Marquette in the lab of Dr. Subhas Das at OSU/CHS

Shelbie Raney in the lab of Dr. Gerwald Koehler at OSU/CHS

Jessica Vallejo in the lab of Dr. Al Rouch at OSU/CHS and

Andrew Maher in the lab of Dr. Natarajan Aravindan at OUHSC.

We wish you great experiences while investigating this summer! You make us proud!



TCC Engaged Learning Website information for undergraduate research for students and faculty is found within the TCC Engaged Learning >Faculty Professional Development Resources> High-Impact and Significant Instruction> Undergraduate Research

OR

TCC Engaged Learning
>Undergraduate Research for Students

Engage, Explore, Experience

The **National Conference on Undergraduate Research 2019: Engage, Explore, Experience** was held at Kennesaw State University just north of Atlanta, Georgia on April 11-13, 2019. The conference provides expression of all forms and topics of undergraduate research. Tulsa Community College sent eight students and eight faculty members this year.

FUNDING:

We are grateful to the following funding agencies that assisted with travel to NCUR.

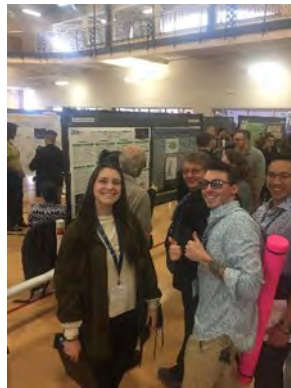
The **Tulsa Community College Foundation** funds with a grant request written by Diana Spencer.

Phi Theta Kappa funded Justin West.

Engaged Learning funds for faculty development.

Also, **Oklahoma INBRE** played a large part in travel through the TCC Subcontracted funds and through individual **travel awards granted to faculty members** Dusti Sloan, Mary Phillips, Mark Swanson, Mona Easterling, and Diana Spencer.

The travel would not have been possible without tremendous assistance from Melissa Teachnor and Cindy Shanks in the Engaged Learning Office and Melissa Thurston and Lyn Kent in the Science and Mathematics Office. The Council on Undergraduate Research and the Community College Undergraduate Research Initiative were also instrumental in the quality of the trip and projects. Individual faculty and students wrote personal reflections and they are available at the Engaged Learning Website.



Consistent Innovator and Practitioner of Undergraduate Research and Scholarly Activities

Organized by GKFF Endowed Chair of Research, Diana Spencer, in collaboration with faculty members from the SEArCHH & ASPIRE Learning Community. The Community includes active participation of faculty from the following disciplines: Humanities, Sociology, Chemistry, American Sign Language, Biology, Biotechnology, Child Development, and Theatre.

Resource and Evidence Guide for TCC Faculty

(In answer to the question: “If I want to undertake development in undergraduate research (UR) at TCC, what are my steps and benchmarks?”)

Please demonstrate consistent action over the past three years in the following categories of “Undergraduate Research and Scholarly Activities” (RSA). Please share your growth and involvement with personal accounts of your work.

Personal professional development and growth of the learning community

- Attended a research or scholarly activities venue while accompanying students
- Presented personal and/or student work at a research venue
- Active in the TCC SEArCHH & ASPIRE Learning Community
 - Indicated by attendance at meetings and personal communications with community
- Attended RSA training workshops

Active in leading research experiences for students

- Developed multiple classroom investigations, independent investigations, and/or scholarly activities with open-ended questions
- Evidence of embedded activities or faculty-mentored activities that stimulate student tool development in the field
- Facilitated and attended classroom students’ research presentations
- Developed rubrics and/or learning tools for students during process of in-class investigations
- Showed evidence of ability to change or develop an improved lesson based upon previous empirical results (classroom action research)

Develop student awareness of opportunities and careers in (RSA)

- Encouraged students to attend REACH workshops and/or on bus for Oklahoma Research Day
 - Determined annually by student identification on attendance sheets
- Updated the faculty and course RSA database for student use (available on the internet within Engaged Learning)
 - Available to all faculty biennially through Chair of Research and/or Engaged Learning
- Facilitated student involvement in club and extracurricular activities that includes novel research or scholarly activities (Theatre, Science, Humanities, etc.)

Active in facilitating opportunities for UR at TCC

- Accompanied student(s) presenting novel research or scholarly activities outside of TCC
- Developed partnerships with institutions to provide student investigations (MOUs, company service research, tours of career options in research)
- Acquired funding for student travel for UR and/or scholarly activities
- Acquired grant funding to facilitate UR and/or scholarly activities
- Provided evidence of five letters of recommendation for student internships or the development of a pathway for internship