ANNUAL REPORT OF
UNDERGRADUATE RESEARCH FELLOWS

August, 2018 to May, 2019

ELMER R. SMITH COLLEGE OF BUSINESS AND TECHNOLOGY

SCHOOL OF BUSINESS ADMINISTRATION

Bennett, Nicole

Major:
Accounting

Faculty Mentor:
Janet Ratliff

Research/Project Title:
An Exploration of Tourism Variables' Influence on Direct and Indirect Expenditures Related to Tourism in Kentucky

Project Abstract/Summary:
This exploratory research study examines variables of tourism that could potentially influence tourists' decisions to visit a location. The review of literature addresses the economic impact of tourism, SOAR initiative in Kentucky, attractions and destination tourism, branding, regional assets and economic development. Tourism, both locally and nationally, has become a dominant economic driver for development within any community. Literature in this area addresses the importance of both physical characteristics of a location, as well as cultural attributes.

Using Aksoz and Arikan (2008), as the framework for this study, the following are the five components of tourism specifically identified: attractions, accessibility, accommodations, activities, and amenities. The researchers further determined that a sixth component emerged from the research, referencing it as the sixth "A", awareness. The way consumers research and plan travel has been significantly influenced by the digital revolution. Information and communication technology (ICT) as well as social media and mobile marketing (digital marketing) in consumers' research and decisions has become a key component in travel.

Based upon the review of literature, data was collected from a sample of 54 Appalachian counties in Kentucky. Variables identified in the literature were collected and analyzed for each county or city promoted on the state of Kentucky website (kentuckytourism.com) and through census information provided for each county in Kentucky at census.gov. The findings of this study are reported along with a discussion of how tourism throughout the counties of Kentucky can greatly affect the economy within each of these counties. Additionally, information was collected on how counties are choosing to market and promote the tourism taking place within each county.

Project Dissemination:
Morehead State University Celebration of Student Scholarship, April 24, 2019.

Awards and/or Honors:
Certificate of Merit at Celebration of Student Scholarship

Post-Graduation Plans (Seniors only):
I will be attending Northern Kentucky University to pursue a Master of Accountancy.

Gdovka, Anna

Major:

Sport Management

Faculty Mentor:

Steve Chen

Research/Project Title:

Collegiate Athletic Fans Perception of the Use of Social Media in Marketing

Project Abstract/Summary:

Over the last five years, social media has become the dominant tool for people to receive news and messages. Nowadays, sports fans also turn to the four main platforms of social media, Facebook, Twitter, Instagram and Snapchat, to receive marketing information, highlights, updates, and statistics while consuming sports content. Numerous studies indicated the greatest advantages for all levels of sports organizations using social media to promote the events and engage their fans. To fully understand the utilization of social media and its effectiveness for marketing intercollegiate athletic events, this study examined 149 event spectators' (62% males and 38% females) preferable methods for obtaining athletic information and promotional messages of a regional collegiate athletic program in Appalachia. The results showed the respondents relied on social media as much as the official athletic website to obtain information and game content. They relied far less on the traditional means such as word of mouth, radio, and printed media. The use of Facebook (72%) was still more prevalent than the use of Twitter (43%) perhaps because a greater number of respondents (60%) were 45 years of age or older. Nevertheless, 56% of respondents were satisfied with the content received through social media. Practical strategies for increasing certain types of video content and messages to enhance student event attendance and engagement were addressed based on the analyses of this data. It is logical for athletic programs to create employment or internship positions to further generate and monitor promotional and informational content in social media platforms.

Project Dissemination:

2019 Posters at the Capitol

2019 Celebration of Student Scholarship

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Anna plans to do her internship with the Athletic Department of Cleveland State University.

Hensley, Christian S.

Major:

Sport Management

Faculty Mentor:

Steve Chen

Research/Project Title:

Females Serving as the Head Coach of Competitive Elite Male Sports

Project Abstract/Summary:

Recent coaching employment of Becky Hammon and Kathryn Smith in the NBA and NFL inspires the discussion of the potential of witnessing the first female head coach hired in men's professional basketball and football. Despite the presence of female leaders in many business and political realms, there still seems to be a lack of gender equality in the employment of female administrators and coaches in the male dominant sports. This study investigates how women were perceived as ideal head coaching candidates in a male dominant sport based on 132 student-athletes' responses (70 males and 62 females). An exploratory factor analysis was performed to address four areas of responses: (1) participants' belief in female coaches' competency, (2) disadvantages and stereotypes faced by the female coaches, (3) the traditional dominant thoughts, (4) preference toward female coaches, and (5) female coaches' unique traits and strengths. In general, the respondents moderately agree that females have the adequate abilities and knowledge as male coaches do to handle the coaching tasks; however, they still don't feel very comfortable about having a female as their head coach. In agreement with several findings, the research found that male athletes are more likely to show disrespect toward female coaches and question their desire to win. Additional constructive strategies were provided to support future females overcoming the perceived barriers for becoming a head coach and improve existing hiring practices.

Project Dissemination:

Hensley, C.S., & Chen, S.S. (2019, June). *Females Serving as the Head Coach of Competitive Elite Male Sports.* Kentucky Undergraduate Research Journal.

Awards and/or Honors:

Sport Management Undergraduate Student of the Year

Post-Graduation Plans (Seniors only):

N/A

Potts, Karly

Major:

Business Management

Faculty Mentor:

S. Ali Ahmadi

Research/Project Title:

Factors Determining the Use of and Access to Broadband Connection in Eastern Kentucky Counties

Project Abstract/Summary:

The purpose of this paper was to investigate the factors determining the broadband internet access and/or use in eastern Kentucky. Internet Access, as the dependent variable, was postulated as being a function of two factors, income level and educational attainment. The data from the United States Census Bureau regarding the median household income by county, and Kentucky's educational attainment by percentage of high school graduates or higher were collected. A multiple regression model, as well as two simple regression models, were tested. The results of the study indicated only the level of education attainment in the counties was a significant factor in the use and access to internet use.

Project Dissemination:

Oral presentation at the Celebration of Student Scholarship on April 24, 2019.

A paper, out of this study, will be submitted to a Kentucky journal.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Wallace, Rachel

Major:

Business

Faculty Mentor:

Ahmad Hassan

Research/Project Title:

The Kroger Company – 135 Years Later and A Southern Regional University Navigating the New Normal

Project Abstract/Summary:

The Kroger Company – 135 Years Later

The external environment for the grocery industry is constantly changing. New trends are forming each year. Competition is no longer just with other major grocery chains but has been expanding to other channels. Consumer preferences are changing and their buying preferences are resulting in lower profit margins. Kroger is having to adapt to better compete within the industry. The purpose of this case is to better understand the implications of a changing environment and evaluate how Kroger is strategically approaching these rapid changes in the industry.

A Southern Regional University Navigating the New Normal

As with most institutions of higher education, KSU has been struggling in the midst of a decade state funding cuts, increased rivalry, and the performance-based funding system. In addition, KSU is located in a region that is hard-hit from the severe economic downturn caused by coal-mining closings. Since the onset of the economic downturn in 2008, the institution has gone through the process of "trimming the fat" to maintain operational efficiency and solve the dilemma of addressing the harsh fiscal environment without resorting to tuition increases which undermines its mission of creating affordable and accessible education to low income or first-generation students.

Institutions of higher education like any organization need to effectively change themselves in order to keep with the pace of changes in their environment and thus survive and grow. Organizational changes can be overall strategic changes, which will cause subsequent changes in multiple functional areas. The purpose of this case is to gain a better understanding of the challenges posed by both the internal environment and external environment of the institution, and the strategies the institution adopt to deal with the challenges caused by environmental change.

Project Dissemination:

Presentation:

Wallace, Rachel and Dr. Hassan, Ahmad. (2019, April 24th). *A Southern Regional University Navigating the New Normal,* oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Planning to Publish

Case Research Journal – *A Southern Regional University Navigating A New Normal*

South East Case Research Journal – The Kroger Company – 135 Years Later

Awards and/or Honors:

Certificates of Exceptional Merit, Celebration of Student Scholarship, Business and Technology oral presentation, Morehead, KY, April 2019.

Post-Graduation Plans (Seniors only):

I am planning on entering the workforce with a position in accounting or auditing. I am waiting to hear back after some job interviews. I will also be actively pursuing my CPA license, since I have the 150 credit hours needed.

SCHOOL OF ENGINEERING AND INFORMATION SYSTEMS

Coppola, Craigory V.

Major:

Computer Science

Faculty Mentor:

Heba Elgazzar

Research/Project Title:

Social Network Analytics Using Machine Learning

Project Abstract/Summary:

The goal of this research project is to analyze the dynamics of social networks using machine learning techniques to locate maximal cliques and to find clusters for the purpose of identifying a target demographic. Unsupervised macine learning techniques are designed and implemented in this project to analyze a dataset from YouTube to discover communities in the social network and find central nodes. Different clustering algorithms are implemented and applied to the YouTube dataset. The well-known Bron-Kerbosch algorithm is used effectively in this research to find maximal cliques. The results obtained from this research could be used for advertising purposes and for building smart recommendation systems. All algorithms were implemented using Python programming language. The experimental results show that we were able to successfully find central nodes throgh clique-centrality and degree centrality.

Project Dissemination:

Oral Presentations:

Coppola, Craigory V. and Elgazzar, Heba (2019, April). *Social Network Analytics Using Macine Learning*, The National Conference of Undergraduate Research, Kennesaw, GA, April, 2019.

Coppola, Craigory V. and Elgazzar, Heba (2019, April). *Social Network Analytics Using Machine Learning*, The Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Good, Patrick

Major:

Design and Manufacturing Engineering Technology

Faculty Mentor:

Kouroush Jenab

Research/Project Title:

Simulation Software: Anylogic versus Vensim

Project Abstract/Summary:

An evaluation of Anylogic and Vensim simulation software using the free student versions. We compared ease of use, tutorials, functionality and price. Vensim was the better program for all but functionality and was the software we recommended.

Project Dissemination:

Perkins III, Patrick C., Good, Patrick and Professor, Kouroush Jenab. (2019, April). *Simulation Software: Anylogic and Vensim*, poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Hansford, Amanda

Major:

Computer Science

Faculty Mentor:

Heba Elgazzar

Research/Project Title:

Breast Cancer Breast Diagnosis using Machine Learning Algorithms

Project Abstract/Summary:

The goal of this research project is to design and implement machine learning algorithms that can be used for breast cancer diagnosis. The focus of this research will be on supervised learning using classification algorithms. Datasets with features computed from a digitized image of a fine needle aspirate of a breast mass will be used for training and testing the machine learning models. Feature selection algorithms will be used for dimensionality reduction to reduce the complexity of the problem. Several experiments will be conducted to compare between different machine learing algorithms.

Project Dissemination:

Amanda Hansford and Heba Elgazzar (2018, November), *Breast Cancer Breast Diagnosis using Machine Learning Aglorithms*, poster presentation, Kentucky Academy of Science, November 2, 2018.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Howell, Levi J.

Major:

Mechanical and Manufacturing Engineering

Faculty Mentor:

Jorge Ortega-Moody

Research/Project Title:

Design of a Pump System for an Indoor Greenhouse

Project Abstract/Summary:

In a previous year in constructing the indoor greenhouse there were issues with the nutrient pumps in that the design allowed air in the lines and they were fragile. A concensus was reached, and a decision was made to switch to six electronic pumps, four being for nutrients and two being for pH regulation. This created a need for a new housing to be made for the electric pumps. That's where I designed a housing that serves as a case and a base for additional parts that was sturdy and cost effective. The design has three pumps on either side spaced evenly to help optimize space.

Project Dissemination:

Designing and Prototyping of the Pump Housing.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Jordan, Tristan

Major:

Computer Science

Faculty Mentor:

Heba Elgazzar

Research/Project Title:

Content-Based Image Retrieval and Analysis using Machine Learning

Project Abstract/Summary:

The problems of content-based image retrieval and analysis will be explored in this research project with a focus on developing machine learning and image processing techniques that can be used to design and implement new content-based image retrieval (CBIR) system and analyze the images to classify it based on its contents. The CBIR system will be able to search large image datasets to retrieve digital images that are similar to predefined specifications such as a given digital image or a given image type. The search is based on the actual contents of images rather than the metadata of these images. Image processing and feature extraction techniques will be used to analyze the images and extract important features of images. The extracted features will reflect the important characteristics of images that are related to contents (such as colors, shapes, edges, and textures) that can identify the image type. Supervised machine learning techniques will be used to analyze these extracted features and to retrieve similar images. Additional experiments will be conducted to classify and cluster images based on its contents.

Project Dissemination:

It is expected that this project will result in a technical paper that can be submitted for publication or presentation. The student involved in this project is expected to present his work at a national conference or meeting. Also, the student is expected to participate in the annual Celebration of Student Scholarship at Morehead State University.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Perkins III, Patrick C.

Major:

Design and Manufacturing Engineering Technology

Faculty Mentor:

Kouroush Jenab

Research/Project Title:

Simulation Software: Anylogic versus Vensim

Project Abstract/Summary:

An evaluation of two simulation software, Anylogic and Vensim, using the free student versions. Ease of use, tutorials, functionality and price compared. Vensim recommended.

Project Dissemination:

Perkins III, Patrick C. and Professor, Kouroush Jenab. (2019, April). *Simulation Software: Anylogic and Vensim*, poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Graduate Program (MS-ETM) at Morehead State University.

Skaggs, Allie

Major:

Electrical/Computer Engineering Technology

Faculty Mentor:

Cheng Cheng

Research/Project Title:

A Multi-Variable Sensing Platform for Water Quality Monitoring in the Distribution Network

Project Abstract/Summary:

This work designs and develops a water quality monitoring system, with the objective of notifying the user of the real-time drinking water quality parameters. The system measures certain indicators of water quality, such as temperature, pH, and conductivity. In this system, electrical sensors are utilized to measure the parameters. The sensors, through signal conditioning circuits, are connected to a microcontroller, which process and analyzes the acquired raw data. The product is a system that is capable of reading physiochemical parameters, and can successfully process, transmit, and display the readings. Currently, three sensors/sensing circuit are integrated in the developed system: a pH sensor, a temperature sensor, and an AD5933 integrated circuit for impedance measurement. These three sensors/circuits cover four parameters for water quality monitoring: temperature, pH, dielectric constant, and conductivity.

Project Dissemination:

Posters-at-the-Capitol, the Southern Regional Honors Conference, and the Celebration of Student Scholarship, poster presentations.

Brown Bag Research Seminar, oral presentation.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

VanHoose, Justin

Major:

Design and Manufacturing

Faculty Mentor:

Jorge Ortega-Moody

Research/Project Title:

Design and Development of a Self-Regulating Tower Garden and Design and Development of an Autonomous Tractor System

Project Abstract/Summary:

The research projects had essentially the same goal, to test and expand on the research assistant's abilities with CAD software as well as expose them to new aspects in engineering such as programming and electrical control. While the research was based around design aspects, there were times that the researcher was pushed to utilize these new tools to solve problems that were encountered within the projects. The tower garden was intended to utilize aeroponics as well as concentrated nutrients in order to shorten the growing time in several different plants. The Tractor system was intended to offer a hands free option to operators in order to reduce on fatigue and increase safety when operating the vehicle for a long period of time.

Project Dissemination:

VanHoose, J. (2018, April). *Design and Development of an Autonomous Tractor System*. Oral presentation, Morehead, KY, United States of America: Celebration of Student Scholarships.

VanHoose, J., Holbrook, K., Keene, L., & Steele, R. (2018, March). *Chinampa Gardens*. Oral presentation, Morehead, KY, United States of America: Idea State U Regional Competition.

VanHoose, J., Holbrook, K., Keene, L. & Steele, R. (2018, April). *Chinampa Gardens*. Oral presentation, Lexington, KY, United States of America: Idea State U State Competition.

Awards and/or Honors:

Idea State U Regional Competition: The research team along side the business team (College of Business Students) received a top five placement earning the team the right to compete at the state competition one month later.

Morehead's Celebration of Student Scholarships.

The research presentation earned the Exceptional Merit Award for the department of Engineering Technology.

Post-Graduation Plans (Seniors only):

N/A

Webb, Joshua

Major:

Computer Science

Faculty Mentor:

Sherif Rashad

Research/Project Title:

Design and Implementation of an Innovative System for Automatic Recognition of ASL using Machine Learning

Project Abstract/Summary:

Deaf and hearing-impaired persons learn American Sign Language (ASL) as their natural langauge. There is a need to a new innovative technology that will enable deaf and hearing impaired persons to communicate without difficulty anytime and anywhere with persons who do not know ASL. The proposed research project will introduce a novel approach to explore the problem of automatic real-time conversion from ASL to speech using motion sensors, machine learning, and mobile technology. The goal of this project is to design a smart system to capture and analyze hand movement and gesture using different types of sensors and machine learning algorithms. The new innovative system will be able to work in an adaptive way to learn new signs and to expand and improve the dictionary of the sign language. This system will have a wide range of applications for healthcare, education, gamification, entrainment, and many other applications. The undergraduate research student helped in developing and testing machine learning algorithms that were used in this project to recognize four letters. The student learned how to use motion sensors and machine learning algorithms and the results are promising. He developed an initial prototype for the project and he will continue to work to add all letters and words.

Project Dissemination:

Joshua Webb and Sherif S. Rashad, *Design and Implementation of an Innovative System for Automatic Recognition of ASL using Machine Learning.* Poster presentation, Posters-at-the-Capitol, Frankfort, KY, February 21, 2019.

Joshua Webb and Sherif S. Rashad, *Design and Implementation of an Innovative System for Automatic Recognition of ASL using Machine Learning.* Oral Presentation, 14th Annual Celebration of Student Scholarship, Morehead State University, Morehead, KY, April 2019.

Awards and/or Honors:

Merit Award, 14th Annual Celebration of Student Scholarship, Morehead State University, Morehead, KY, April 2019.

Certificate of Recognition, ACM (Association for Computing Machinery) Students Chapter at Morehead State University.

Post-Graduation Plans (Seniors only):

N/A

COLLEGE OF EDUCATION

DEPARTMENT OF EARLY CHILDHOOD, ELEMENTARY AND SPECIAL EDUCATION

Cottrell, Brianna

Major:

P-5

Faculty Mentor:

Kim Nettleton

Research/Project Title:

Teacher to Teacher: Mentoring Preservice Teachers into the Profession

Project Abstract/Summary:

The professional preparation programs for the education profession are being challenged to change the ways in which preservice teachers are trained. Collaborative partnerships between the university and local schools are developing. Currently, there is a heavy emphasis on establishing strong mentorships between experienced teachers and preservice teachers. How effective is mentoring? What are the lasting results? Are mentors better teachers once they have provided leadership and guidance to a preservice teacher or do they just pass on poor teaching skills? This study examined the question of how mentoring effects educators.

Project Dissemination:

Cottrell, B. (2018). *Teacher to Teacher: Mentoring Preservice Teachers into the Profession*. Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Johnson, Kaylee G.

Major:

LBD/P5

Faculty Mentor:

Kim Nettleton

Research/Project Title:

edTPA: Relevance and Reward

Project Abstract/Summary:

Does a standardized approach to instruction and assessment meet the needs of the teaching profession? The project will examine current research on the edTPA, and use the survey and completer data that the College of Educaiton is collecting as part of the CAEP accredidation and ongoing assessment and survey data. Current research will support the analysis of MSU edTPA survey and edTPA assessment data.

Project Dissemination:

Kayla began her UGF during Spring 2019 and is just starting her project. She is still in the literature review stage right now.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

DEPARTMENT OF FOUNDATIONAL AND GRADUATE STUDIES IN EDUCATION

Birdwhistell, Katie J.

Major:

English Education

Faculty Mentor:

Christopher Beckham

Research/Project Title:

The Effect of Promoting Self-Regulation through Technology on Student Success

Project Abstract/Summary:

This paper discusses the concept of responsibly integrating technology in the K-12 classroom to promote success through means of self-regulation. Self-regulation is the determination of students to be conscious of their actions and habit, and to use this consciousness to push themselves to be high-achievers in the classroom. Teachers can encourage high student achievement by being mindful of the technology that they incorporate in their instruction, and by showing their students to be mindful of their personal use of technology. Using different technological tools to track student progress can help the teacher enforce the self-regulation of students by giving quantifiable data that they can use to hold students accountable for their own learning. Responsibly embedding electronic components into their lessons can also help teachers promote self-regulation by transcending the confines of what they would be able to present to their students, therefor engaging students in their content and hopefully providing them with more intrinsic motivation to learn. Technology is an excellent tool for teachers to promote self-regulation in their classroom, as long as they are mindful of how they use it.

Project Dissemination:

Birdwhistell, Katie J. (2019, April 24). *The Effect of Promoting Self-Regulation through Technology on Student Success.* Poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Foit, Gabriel

Major:

Chemistry

Faculty Mentor:

Timothy Simpson

Research/Project Title:

Subjectivism: The Modern Malady

Lewis on the Nature of Man and Education

Project Abstract/Summary:

The research project encompassed an in-depth analysis of C.S. Lewis book *Abolition of Man,* supplemented by secondary literature and other Lewis writings. In particular, the project focused on what Lewis considers to be the issues of modern education, paired with Lewis' own opinions on a proper education. All of which hinges on the different conceptions of man's nature, upon which Lewis and modernity disagree. The project produced a paper and an oral presentation for dissemination.

Project Dissemination:

The project was orally presented at the Spring 2019 Kentucky Honors Round Table (KHR) at Bellarmine University and the Celebration of Student Scholarship at Morehead State University.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Nash, Victoria

Major:

English/History

Faculty Mentor:

Tim Simpson

Research/Project Title:

Educational Accountability: A Historical and Philosophical Evaluation of School Responsibility

Project Abstract/Summary:

Since the colonial era, American schools have been held responsible for producing an array of student outcomes. The traditional reading, writing and arithmetic represent only a small sample of such outcomes. While educational accountability is accepted and expected by the American public, contention arises when we seek to identify "who" should be held accountable, "for what" outcome, and "with what consequence." The answers to these questions remain controversial, elusive, and challenging, even today. Yet, the current American educational system persists in the expectation and use of school accountability, specifically test-based accountability. Is an accountability system conducive to producing good schools and capable students? This paper will attempt to address this question by first reviewing the basic notion of accountability and briefly recounting its history in American education. We will give special attention to understanding the purpose, assumptions, and mechanics of test-based accountability. We will then turn to educational philosopher Harry Broudy for a penetrating analysis of educational accountability. His examination affords us the opportunity to identify potential concerns with any educational accountability system. As a result, we are in a better position to understand both the potential and limitations of using accountability systems to produce good schools and capable students.

Project Dissemination:

Nash, Victoria L. and Professor, Timothy Simpson (2019, February). *Educational Accountability: A Historical and Philosophical Evaluation of School Responsibility,* Oral presentation, Kentucky Honors Roundtable, Louisville, KY, February, 2019.

Nash, Victoria L. and Professor, Timothy Simpson (2019, April). *Educational Accountability: A Historical and Philosophical Evaluation of School Responsibility,* Oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

Exceptional Merit Award, Oral Presentation, College of Education, Celebration of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):

N/A

Turley, Jordan

Major:
Elementary Education/MSD

Faculty Mentor:
Lola Aagaard

Research/Project Title:
High-Stakes Assessments

Project Abstract/Summary:
High-stakes assessments measure student achievement and have been central to education debate and reform for a very long time. Norm- referenced achievement tests (such as the Comprehensive Test of Basic Skills [CTBS]) were in use in many districts decades prior to No Child Left Behind (NCLB) legislation in 2000. NCLB was a broader attempt to require widespread use of standardized tests tied to strict accountability standards. Proponents of high-stakes tests maintain they force teachers to do a better job, which is worth the stress that it puts on both students and educators. In the view of their supporters, high- stakes testing is linked to improvement on other national and international tests. Research indicates, however, that holding educators to the unrealistic goal of getting all students up to standard at the same time resulted in an array of negative consequences that were not intended by the original legislation. Reforming U.S. educational methods to cultivate students' intrinsic motivation might be a more powerful force for achievement than applying extrinsic motivation through rewards and sanctions and would have fewer negative consequences. This project was supported by an Undergraduate Research Fellowship.

Project Dissemination:
Turley, J. (2019, April 24). *High-stakes Assessments*. Presented at the Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
N/A

DEPARTMENT OF MIDDLE GRADES AND SECONDARY EDUCATION

Cook, Dorian

Major:
Elementary and Special Education

Faculty Mentor:
Lesia Lennex

Research/Project Title:
3D Engineering in the Elementary Schools

Project Abstract/Summary:
Research with 3D technologies and 1:1 initiatives in elementary school instruction involving the curriculum construction, delivery, and analysis of learning as intended for 2018-2019. We plan to construct, deliver, and analyze the learning and achivement of students within this school year so that curriculum development with 3D and 1:1 to be disseminated to professional communities.

Publications:
Cook, D. and Lennex, L. (February 2019). *Constructed Learning in Elementary Mathematics*, Poster presentation, Kentucky Association for Gifted Education, Lexington, KY.
Cook, D. and Lennex, L. (2019). *3D Engineering in the Elementary Schools*, Celebration of Student Scholarship, Poster presentation, Morehead State University, Morehead, KY.

Productions:
3D production of LiDar scanner housing for project with Craft Academy

Awards and/or Honors:
Awarded 2019 COE Certificate of Merit for Celebration of Student Scholarship poster presentation.

Post-Graduation Plans (Seniors only):
N/A

Purdum, Kelsey L.

Major:

P-5 Education

Faculty Mentor:

Kimberlee Sharp

Research/Project Title:

Elementary Teachers Experiences and Attitudes using Informational Texts to Teach Social Studies

Project Abstract/Summary:

One component of the United States' public school curriculum core is social studies. Since the No Child Left Behind Act (2001), social studies instruction in our nation's elementary schools has suffered marginalization in the forms of reduced instructional time, elimination in grades where it is not tested, and integration with other subjects. The NCLB Act overlooked social studies in its mandated accountability provisions, as in its original language, only mathematics, reading, and writing were included among the tested subjects for determining school effectiveness and student success. Significant research has been conducted since 2001 to show the effects of social studies' omission from NCLB on teaching and learning. Some of this research has included elementary teachers' instructional practices and decision - making during the NCLB era, especially with regard to integrating social studies with other core subjects. One subject in which social studies has been shown to be integrated within the elementary grades is English language arts/reading. This specific study will examine the social studies - ELA/ reading integration more closely in order to better understand the emphasis elementary teachers in eastern Kentucky place on social studies content knowledge by ascertaining their instructional purposes (e.g., to teach social studies content, to teach ELA / reading skills, or both), factors influencing teachers' instructional decisions (e.g., state and national social studies standards, ELA Common Core standards, or both, administrative leadership), and teachers' assessment criteria (e.g., social studies content, ELA/ reading skills, or both).

Project Dissemination:

Sharp, K.A. & Purdum, K.L. (2018, November). *Informational Texts: A Key to Revitalizing Elementary Social Studies?* Poster presentation, 98th Annual Conference of the National Council for the Social Studies. Chicago, IL.

Sharp, K.A. & Purdum, K.L. (2019, March). *Revitalizing Elementary Social Studies using Informational Texts.* Presentation, Annual Conference of the Tennessee Council for the Social Studies. Gatlinburg, TN.

Sharp, K.A. & **Purdum, K.L.** (2019). *Revitalizing Elementary Social Studies using Informational Texts.* Paper presentation, Annual Conference of the Tennessee Council for the Social Studies, Gatlinburg, TN. (ED593610).

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Ms. Purdum will graduate with her BA in Elementary (p-5) Education on May 11, 2019. She is returning to her hometown of Gallipolis, OH, to begin her teaching career.

I am unaware of Ms. Purdum’s graduate school plans at this time.

Rawlins, Cory E.

Major:

Middle Grades Education

Faculty Mentor:

Sara J. Lindsey/Sandra E. Riegle

Research/Project Title:

Examining and Identifying Components of Propaganda and Indoctrination

Project Abstract/Summary:

Indoctrination is the process where opinionated biases, methodologies, attitudes, and/or ideals are disseminated to others; it involves a disregard for evidence and reason. Further, it involves unsubstantiated conviction in one’s beliefs and intolerance for opposing ideas, viewpoints, thoughts, etc. Propaganda is the purposeful promotion of certain beliefs and/or points of view and can be a political tool used rhetorically in speeches by those in positions of power, in order to sway public opinion about a certain issue. Critical thinking, which is a fundamental skill and a primary purpose of education, is needed to discern between indoctrination, propaganda, and knowledge. As such, and given the contemporary highly partisan political climate, we examined communications from current President Donald Trump and current Secretary of Education Betsy DeVos.

Project Dissemination:

Rawlins, C., Riegle, S., & Lindsey, S. (2019). *Examining and Identifying Components of Propaganda and Indoctrination.* Celebration of Student Scholarship. Morehead, KY, April, 2019.

Awards and/or Honors:

Recognition of Research, College of Education Honors Reception, April, 2019.

Post-Graduation Plans (Seniors only):

N/A

CAUDILL COLLEGE OF ARTS, HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF CREATIVE ARTS

Davidson, James M.

Major:

Art

Faculty Mentor:

Elizabeth Mesa-Gaido

Research/Project Title:

Down the Rabbit Hole: A Graphic Novel
(Originally titled: "Very Faun of You: A Journey into the Woods of Unusual Characters and Far Off Lands")

Project Abstract/Summary:

Original Abstract:

The project will be based on Davidson's original characters, utilizing them to create and develop in-depth concept designs, character analysis, and storyboarding. He will explore and produce high-level concept art and character designs, resulting in unique, interesting and exciting characters and storylines, with the anticipated outcome of producing a graphic novel or a series of comics, and a website. His long-term goal is to animate the figures, possibly creating a movie. Collaborating with faculty and peers for feedback will also be an important part of Davidson's process.

Abstract for the 2019 Oral Presentation:

Alice in Wonderland by Lewis Carrol is a childhood classic with many different forms of adaptations. The project provides a new contemporary take on this classic, showcasing the protagonists with antagonistic, darker undertones. With this graphic novel, many current concepts are explored relating to social, emotional, and mental health issues. An intimate and raw view of the beloved childhood characters is presented. Character depictions are more mature, crude, and unnerving. This is a multi-year project, with the 2018-2019 focus being on drafting and editing the manuscript for the novel. Multiple manuscript drafts are edited and will be used to create the final panel scripts, which will be merged with the drawn images; the final stage will require scanning the images to create digital files, which will be color corrected and edited in Photoshop. Thorough and meticulous research in collaboration with many of the departments on campus, in combination with personal studies of other artist's graphic novels, are used to create an accurate and in-depth graphic novel incorporating concept ideas, character analysis, and storyboarding. This research project was supported by an Undergraduate Research Fellowship.

Project Dissemination:

Davidson, James. (2019, April). *Down the Rabbit Hole: A Graphic Novel*, Oral presentation, Celebration of Student Scholarship, Morehead, KY, April 2019.

Davidson, James. (2018, April). *Down the Rabbit Hole: A Graphic Novel*, Oral presentation, Celebration of Student Scholarship, Morehead, KY, April 2018.

Davidson, James. (2018, May). *Down the Rabbit Hole: Preview, Page 1*, Publication, *Inscape: Literary & Visual Arts Journal*, Morehead State University, 2018, p.50, color image.
Inscape: Literary & Visual Arts Journal, ScholarWorks Digital Archive:
https://scholarworks.moreheadstate.edu/inscape_magazine_archive/80/

Davidson, James. (2017, November). *Down the Rabbit Hole: Graphic Novel Preview*, Exhibition, *Juried Student Art Exhibit*, Gateway Regional Art Center, Mt. Sterling, KY, November 3-26, 2017.

Awards and/or Honors:

Davidson utilized a mini preview print of the completed graphic novel pages as part of his BFA in Art portfolio application; he was accepted into MSU's competitive BFA in Art program in October 2017.

Post-Graduation Plans (Seniors only):

N/A

Justice, Tiffany

Major:

Sociology

Faculty Mentor:

Joy Gritton

Research/Project Title:

Mindfulness at the Haldeman Community Center After School Program

Project Abstract/Summary:

The Haldeman Community Center strives to provide a place for those in the community to meet for fellowship, to provide children with a safe haven away from drugs, to foster the dramatic and musical arts, by providing a place for their practice and performance and to help sustain and enhance the year-round economic, educational, recreational and social well-being of the community's residents. The Haldeman After-School Program offers a safe, child-centered, nurturing after school enrichment program for elementary students Monday through Thursday. Participating children enjoy physical activities, a nutritious snack, a planned learning activity, and help with their homework and tutoring.

For this project, children participated in coordinated mindfulness activities concentrating on two themes: recognizing emotions (and from where they stem), and boosting happiness and engagement through daily practices. This included activities on shame reduction, sensory practices, and grounding. This project has given the children at Haldeman an opportunity to learn the skills necessary to navigate an environment of drugs, poverty, and other social problems, and to emerge happy and healthy.

Project Dissemination:

Justice, Tiffany L. and Dr. Joy Gritton. (2019, April). *Mindfulness at the Haldeman Community Center After School Program*, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

McDaniel, Darcy

Major:

Art

Faculty Mentor:

Robyn Moore

Research/Project Title:

Photography Practicum: Learning the Basics of Managing a Fine Art Photography Studio

Project Abstract/Summary:

The photography practicum provides Art and Design student researchers with the practical experience of managing a fine art photography studio. Students learn how to operate, manage, and maintain industry standard fine art archival inkjet prints as well as a fifteen-station traditional black and white darkroom. This project provides essential expertise and knowledge that students, as lab monitors, both share with other students and incorporate into their own fine art practice and professional activities. Student researchers learn how to mix, store, and dispose of photographic chemistry, provide daily assistance to undergraduate and graduate photography students, and generate ideas for improvements to the lab. Students also contribute to the ongoing revision of the Photography Lab Manual, which specifies best practices and operating procedures for future photography lab monitors. The practical knowledge gained from this experience is highly valuable to colleges, universities, community colleges, artist co-ops, and professional photography labs that seek to employ individuals to manage and teach both digital and analog photography practices. This research was funded by an Undergraduate Research Fellowship.

This undergraduate fellowship has given me the knowledge and first-hand experience to prepare me for working in a professional photography studio. I have expertise that will make me more competitive in applications to fine art jobs or master's programs. Aside from the increase of my own knowledge, I have helped students learn how to make professional-quality photographic prints and expand their skills in troubleshooting equipment. My contribution includes improving the quality of work made in the Department of Art and Design while instilling confidence in students when they are working with photographic processes, presenting their work professionally, and solving problems using critical and creative thinking. This fellowship has expanded future possibilities for myself and other students while furthering the mission of Morehead State University and the Department of Art and Design.

Project Dissemination:

McDaniel, Darcy and Moore, Robyn. (2019, April). *Photography Practicum: Learning the Basics of Managing a Fine Art Photography Studio*, Poster presentation, Celebration of Student Scholarship, Morehead, KY, April 2019.

Awards and/or Honors:

In March my inkjet print “On the Run” was exhibited at the Society of Photographic Education’s 7th Annual Intrnational Combined Caucus Juried Exhibition in Cleveland, Ohio. I had four inkjet prints and one sculpture exhibited in Zenith, a juried show for Art and Design seniors, and one of my photos won an Honorable Mention. In April, my work was exhibited in the Spring Showcase at the Rowan County Arts Center, and I won the award for Outstanding BFA Candidate in Art and Design. Also in April, I exhibited my BFA show “Turbulence,” a series of inkjet prints, in which one photo won the BFA Best Individual Work Award. In May another one of my photos was published in the 2019 edition of *INSCAPE: Literary and Visual Arts Journal*.

Post-Graduation Plans (Seniors only):

After graduation I will be completing an internship at Art Inc., in Lexington, Kentucky. I will be helping Art Inc. teach local

Rhoden, Kaitlyn

Major:

University Studies

Faculty Mentor:

Joy Gritton

Research/Project Title:

Using Art to Teach Global Issues

Project Abstract/Summary:

It is very important that children of today are exposed to the arts, since they may not have extensive exposure at their schools. While art is an important outlet for stress and creativity, it can also be used to teach global issues. For this project, the children attending the Haldeman Community Center After School Program participated in activities using a variety of media to address primary themes: the environment and cross-cultural diversity. Children were able to meet a special guest from the Morehead-Rowan County-Morehead State Uuniversity Community Recycling Center and learn more about recyclable materials. They were encouraged to use these materials in their projects. As part of coordinated activities at the After School Program, the children also learned about other cultures, practiced art forms from those cultures (including origami, mask making, and rainmakers), and created sets for a play in which the children ”traveled” to different regions and experienced other cultures. The Goal was for them to gain understanding and respect for the earth and its different people. This project was supported by an Undergraduate Research Fellowship from MSU.

In summary, I found this project to be very effective, not only for me, but also for the students involved. My future career goals are to become an elementary school teacher, and I was able to obtain skills and insights that have helped me prepare for this career, about which I am passionate. I also was able to conduct research about after school programs and speak to current teachers in the field to gain further knowledge. The children benefitted because they were taught the Global issues of recycling and diversity and developed a deep interest in these subjects. They are much more self-aware of the amount of waste they produce and take initiative to reuse materials when they can. I have also observed the amount of bullying decrease among the children, as well. Since the children were exposed to literature frequently, this helped with their reading and comprehension skills. The children also received tutoring help at the center, so their academics improved, as well as their knowledge of global issues.

Project Dissemination:

Rhoden, Kaitlyn R. and Dr. Joy Gritton, (April 2019). *Using Art to Teach Global Issues.* Oral presentation. Celebration of Student Scholarship, Morehead, Kentucky, April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

My plan after graduating is to continue my education and become an elementary education teacher, enrolling in the MAT program. I would like to stay in the local area and teach in Rowan County.

Smith, Heather L.

Major:

Agricultural Education

Faculty Mentor:

Joy Gritton

Research/Project Title:

Agricultural Education at the Haldeman Community Center After School Program

Project Abstract/Summary:

This project consists of coordinating an agricultural education program and assisting with raised bed gardening for children participating in the Haldeman Community Center After School Program. Resources used for this research fellowship includes the Morehead State University Farm, which donated a variety of seeds and cabbage and broccoli plants; Teach KY AG, a resource for lesson plans; and readily available information provided by the U.S.D.A. and non-profit organizations, used for planting dates and information of soil health. Soil health is being maintained according to soil test I conducted and the compost pile that I designed and built. Emphasizing the importance of locally grown foods and access to healthy, fresh food, the project included an introduction to caring for animals and the soil's health, and promoted themes fostered at the Haldeman Center: kindness, personal responsibility, working together cooperatively, and respect for others. The children have gained a better appreciation and compassion for gardening, plants, animals, and each other.

Project Dissemination:

Smith, Heather L. and Dr. Joy L. Gritton (2019, April) *Agriculture Education at the Haldeman Community Center After School Program*, Oral presentaiton, Celebration of Student Scholarship, Morehead, KY, April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Stachler, Madison

Major:

Agricultural Education

Faculty Mentor:

Joy Gritton

Research/Project Title:

Learning About Living Things at the Haldeman Community Center After School Program

Project Abstract/Summary:

My project was to coordinate an agricultural education program and assist with raised bed gardening for children participating in the Haldeman Community Center After School Program, incorporating local resources such as the extension office and the Morehead State University farm. Emphasis was placed on how plants play a large role in our life and how the children could do their part on a smaller scale than a farm. The importance of maintaining habitat and biodiversity was also stressed and the project promoted goals and themes fostered at the Haldeman Center, such as kindness, personal responsibility, working together cooperatively, and respect for others.

The Haldeman After School Program offers a safe, child-centered, nurturing, after school enrichment program for elementary students Monday through Thursday during the months of March, April, September, and October at the Haldeman Community Center. Participating children enjoy physical activities, a nutritious snack, a planned learning activity, and help with their homework and tutoring.

The Haldeman Community Center's mission is to provide a place for those in the community to meet for fellowship, to provide children with a safe haven away from drugs, to foster the dramatic and musical arts, by providing a place for their practice and performance and to help sustain and enhance the year-round economic, educational, recreational and social well-being of the community's residents.

Project Dissemination:

Stachler, Madison N. and Dr. Joy L. Gritton (2018, April). *Agriculture All Around Us*, Oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2018.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

SCHOOL OF MUSIC, THEATRE AND DANCE

Bowman, Elizabeth

Major:
Traditional Music
Faculty Mentor:
Nathan Kiser
Research/Project Title:
Roots Folks: Celebrating the Faces of Traditional Music
Project Abstract/Summary:
Roots Folks is an Instagram page aimed at illustrating the common bond we all share, whether we're aware of it or not, in traditional music. The simple process was that a subject was asked what their traditional music story was. This not only provided information to post on the page, but gave interesting results as to whether or not our oral history traditional was still as widespread as it once was. For every 10 people asked, only 2 answered with their story or at the very least engaged in conversation. The most successful aspect of the project was how interested people became once it was of the ground and they had a substantial product to look at.
Project Dissemination:
Bowman, Elizabeth P. (2019). *Roots Folks: Celebrating the Faces of Traditional Music.* Celebration of Student Scholarship, Morehead, KY. 2019.
Roots Folks. @rootsfolks; Publication, Instagram.com/rootsfolks. Internet. 2018.
Oral Presentations:
Awards and/or Honors:
Recognition at Morehead State University's annual Celebration of Student Scholarship, 2019.
Post-Graduation Plans (Seniors only):
Continue teaching music lessons, record an album at the Kentucky Center for Traditional Music, and continue touring.

Broadhurst, Janessa

Major:
Music Education
Faculty Mentor:
Michele Paise
Research/Project Title:
Majoring in Music: The Effects of Gender, Family and Former Teachers
Project Abstract/Summary:
Music majors often experience a lack of support while in college because many perceive that it is not a "real" profession. The purpose of this study is to investigate the obstacles that music majors face at Morehead State University. Results will be discussed and suggestions for future research will be made.
It was concluded that female students, both first and non-first-generation students, and students that do not receive support for majoring in music tend to encounter related problems.
Project Dissemination:
Student, Janessa Broadhurst and Professor, Dr. Michele Paise (2019, April). *Majoring in Music: The Effects of Gender, Family and Former Teachers*, Poster presentation. Celebration of Student Scholarship, Morehead, KY, April, 2019.
Awards and/or Honors:
Award of exceptional merit, Celebration of Student Scholarship, Caudill College of Arts, Humanities and Social Sciences, Morehead State University, April 2019.
Post-Graduation Plans (Seniors only):
N/A

Bunts, Alyssia G.

Major:

Music Education

Faculty Mentor:

Ellen Mosley

Research/Project Title:

Fundraising Practices for New Symphony Orchestras in the United States

Project Abstract/Summary:

The majority of symphony orchestras in the United States were founded before 1960 and have cultivated significant endowments that provide stability and ensure the success of their nonprofit organizations. The Cave Run Symphony Orchestra (CRSO) in Morehead, Kentucky is less than ten years old and will benefit from research into the best methods for fundraising and grant applications for an organization of its age and size. Alyssia G. Bunts will conduct extensive research into available grants for the CRSO, identify community partners and events that have a potential for collaboration, and write a paper and powerpoint presentation exploring the “best practices” new nonprofits in the arts have implemented with success in similar organizations.

Project Dissemination:

This research project will be presented to the Cave Run Symphony Orchestra’s Artistic Advisory and Fundraising Committees in May, 2019. The results indicated some strategic issues facing the Cave Run Symphony’s fundraising goals based on the size of the community and its economic conditions. Full presentation to the board was not recommended until a full financial overview can be developed by the fundraising committee this summer to help the board chart a viable course financially. Alyssia’s research has been very helpful in demonstrating the environmental challenges facing all types of symphony orchestras in the U.S. and the grant-funding options that may be available for the CRSO.

Exhibition(s):

2019 Annual Morehead State University Celebration of Student Scholarship on 24 April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Accepted into M.A. degree program in Arts Leadership and Management at Wichita State University.

Burnette, Dakota

Major:

Music Education

Faculty Mentor:

DuWayne Dale

Research/Project Title:

Where’s My Duct Tape? An Investigation of Kentucky Band and Orchestra Directors Self-Efficacy Regarding Completion of Instrument Repair and Maintenance

Project Abstract/Summary:

Instrument repair and maintenance are important aspects of an instrumental music program. As with any subject, students must have the tools necessary to learn and grow. Student instruments, however, inevitably require repair and maintenance. Although there are professional instrument repair technicians that can complete these tasks, sending instruments to them can become a financial burden for any program, especially for poorer programs. Music programs with directors who feel more comfortable completing instrument repair and maintenance tasks can potentially save money and keep instruments in the hands of their students.

The purpose of this study was to investigate the self-efficacy of instrumental music teachers with regard to instrument repair and maintenance. A survey instrument was created that included questions designed to explore three research questions.

1. What is Kentucky band and orchestra director’s degree of self-efficacy in regard to their ability to accomplish the instrument repair and maintenance needs of their program?
2. What contributes to the current level of self-efficacy in Kentucky band and orchestra directors in this area?

3. Do Kentucky band and orchestra directors feel there is more of a need for education in this area?

I received a total of 128 participant responses. Although the response rate was low (21%), participants represented a diverse population and provided valuable insight. Based on their responses, participants reported varying degrees of self-efficacy in the area of instrumental repair and maintenance. A majority of participants (*n*=120, 93.8%) indicated that their undergraduate education in instrument repair was insufficient. In addition, a majority of participants (*n*=107, 83.6%), indicated they would recommend additional training in this area at the undergraduate level. Future research is needed in this area to determine other variables affecting directors' feelings and attitudes with regard to instrumental repair and maintenance, but for the participants in this study, undergraduate training in repair and maintenance was viewed as an important area of instruction and one that needed additional focus during pre-service music teacher preparation.

Project Dissemination:

Oral presentation at the annual Celebration of Student Scholarship on April 24. Other opportunities are currently being investigated.

Awards and/or Honors:

Awarded a Certificate of Merit at the Celebration of Student Scholarship on April 24.

Post-Graduation Plans (Seniors only):

Acquire a position (K-12) teaching music.

Copeland, EmaLee

Major:

Music Education

Faculty Mentor:

Michele Payntor Paise

Research/Project Title:

Does Music Make a Difference for At-Risk Students?

Project Abstract/Summary:

The goal of this research was to examine the perceptions of music students who have been identified as At-Risk. The researcher designed a survey to be distributed to a high school band room at an At-Risk school. Unfortunately, the school system would not distribute the survey, and this didn't allow the researcher to gather any data. Instead, the study reflected a large literature review that discovered more longitudinal studies are needed, many at-risk students do not have their own voices concerning their music programs, and that students participating in these programs experience joy and pleasure while doing so.

Project Dissemination:

Poster presentation, Student Scholarship Celebration, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Denysenko, Daria

Major:

Jazz Studies

Faculty Mentor:

Glenn Ginn

Research/Project Title:

How to Manage a Rock and Roll Band on a Low Budget

Project Abstract/Summary:

For my research with Dr. Glenn Ginn, I conducted an experience-based study. My first semester doing the research, I was the assistant producer of the rock and roll show that the commercial music ensemble had on November 15th at the Morehead Conference Center. I was in charge of communicating every rehearsal detail to all the members of the commercial music ensemble, make a seating chart for the show, invite the media from Morehead State to make and publish a story about the show (The Trailblazer), make sure the money for every detail of the show is accounted for, make sure all the band members meet the dress code before the show, promote the show on social media. Moreover, the day of the show, I had to set up the hospitality table for the band, make sure all the personnel was present, set up the ticket sale table, set up sound reinforcements, help the sound crew set up all the equipment on stage, put up the stage decorations, make sure the seats were reserved for the people on the list, and make sure every person in the band and sound crew knew the schedule and was present backstage on time before the show started. In the conclusion, we got 500 people in the audience, and had great feedback from fellow musicians and a lot of audience members that were interviewed after the show.

In the spring semester of 2019, the band was recording a commercial ensemble CD containing only the original tunes that members of the band have composed. I was in charge of creating a brochure for the commercial music program, researching CD duplication companies and comparing prices and value, and making sure members of the band knew when and where they had recording sessions. Moreover, we had three concerts for the unplugged series at the Rowan County Public Library. I was in charge of contacting band members and making sure they were present for the concert, help set up all the equipment, and promote the concerts on social media. We had a great turn out for all the concerts at the library and we successfully recorded a CD as well as made a brochure for the commercial music program.

Project Dissemination:

Student, Daria Denysenko and Professor, Glenn Ginn (2019, April). *How to Manage a Rock and Roll Band on Low Budget*, Oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Eaches, Eliza

Major:

Music Education

Faculty Mentor:

Michele Paise

Research/Project Title:

The Portrayal of Women in Movie Musicals from the 1960's to Present Day

Project Abstract/Summary:

Movie musicals have been a staple of media for nearly a century. This particular media communicates values also seen in society in how cultural issues are viewed, such as gender portrayal and representation. The purpose of this study is to examine the portrayal of women in movie musicals as it relates to concurrent societal standards and expectations of women. Results show that the women in featured roles in these films were predominantly white, heterosexual, and wore predominantly the color white. More result will be discussed.

Project Dissemination:

Eaches, Eliza G. and Paise, Michele Paynter (2019, April). *The Portrayal of Women in Movie Musicals from the 1960's to Present Day*, Poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Attending graduate school at Ohio University for Vocal Performance.

Haney, Ross

Major:

Music Education

Faculty Mentor:

Michele Paise

Research/Project Title:

Technology in the Kentucky Music Classroom

Project Abstract/Summary:

This study seeks to tackle the issue of inequality in music technology among music teachers throughout Kentucky. Students in different regions may have access to minimal music technology and this may affect how their music educator is able to teach rhythmic and melodic concepts and the teacher's perception of success in their students. I will survey music teachers throughout Kentucky to examine the perception of success in their students. I will survey music teachers throughout Kentucky to examine the technology they use in their classroom and how they use technology to teach melodic and rhythmic concepts based on the grade level they teach, their region, the economic backgrounds of their students, and various other factors that could relate to how they teach these concepts in their classroom.

Project Dissemination:

Morehead State University Celebration of Student Scholarship.

Awards and/or Honors:

MSU Art of Music Teaching Fellowship Award.

Post-Graduation Plans (Seniors only):

Preschool through 5th grade music teacher at West Louisville Elementary School in Owensboro, KY.

Johnson, Miranda

Major:

Music Education

Faculty Mentor:

Michele Paise

Research/Project Title:

The Effects of Music and Breathing Exercises on Tic Frequency in Adults with Tourette Syndrome

Project Abstract/Summary:

Many people with Tourette Syndrome experience tics that disrupt daily activities. The purpose of this study was to examine the effects of breathing and music on adults with Tourette Syndrome. Using calming breathing exercises, carefully created playlists, and a simple musical work, the researcher led participants through guided exercises to determine if there was a correlation between tic frequency, stress, and music. Participants completed reflections after each session and all sessions were video-recorded. After analyzing videos and reflections, the researcher looked for changes in tic frequency, both observed and perceived by each participant. Results of the study are reported and suggestions for future research made.

Project Dissemination:

Johnson, Miranda and Paise, Michele P. (2019, February). *The Effects of Music and Breathing Exercises on Tic Frequency in Adults with Tourette Syndrome,* Poster presentation. 18th Annual Posters-at-the-Capitol. Frankfort, KY, February, 2019.

Johnson, Miranda K. and Paise, Michele P. (2019, April). *The Effects of Music and Breathing Exercises on Tic Frequency in Adults with Tourette Syndrome,* Poster presentation. Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

Certificate of Exceptional Merit, Oral presentaion, Celebration of Student Scholarship.

Post-Graduation Plans (Seniors only):

During the summer I will be working on an independent research project concerning the disparity of males to females that choose trombone as their primary instrument. I will also be completing Orff-Schulwerk Level 1 certification. I will be working toward a Master of Arts in Music Psychology at the University of Sheffield starting September 30th. Using my combined areas of knowledge, I plan to create unique learning opportunities for my future music students.

Keyser, Melissa

Major:
Traditional Music

Faculty Mentor:
Nathan Kiser

Research/Project Title:
Traditional Folk: An Exhibit Through the Years

Project Abstract/Summary:
This archival research project will develop an audio/visual exhibit examining the work of traditional musicians included in the Traditional Music archives at The Kentucky Center for Traditional Music. Plaques will be placed under each picture and biographies were typed up for future use on a website

Project Dissemination:
This project is adding to the current exhibit t the Kentucky Center for Traditional Music and will be available for public viewing and will eventually be accessible online.

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
Melissa plans to move to Arkansas and teach lessons in a community music program. She has applied for many music related jobs in the area.

Lindsey, Brandon

Major:
ECET/Music Studies

Faculty Mentor:
Jesse Wells

Research/Project Title:
Traditional Music Archive Research Assistant, Banjoist

Project Abstract/Summary:
Preservation of Kentucky Center for Traditional Music's Traditional Music Archive's banjo related materials (lessons, articles and photographs) via conversion to archival quality digital conversions. Development of banjo lesson materials pertaining to banjo mechanics and styles specific to students and professionals in music industry.

Project Dissemination:
N/A

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
Full-time entrepreneur and solor artist plans. Working on creating a personal brand as a musician and instructor.

Spencer, Chloe

Major:
Music/Business

Faculty Mentor:
Lola Aagaard

Research/Project Title:
Exploring Gender Disparity in the Instrumental World

Project Abstract/Summary:
This project first used literature reviews to determine where gender disparity occurs between individual instrument choices in the music community. Next, we broke the explanations into two categories: nature and nurture. This semester's research focused on the natural factors. We made connections between the skillsets of specific instrumentalists and hormones that control corresponding areas of the brain. We evaluated how varying levels of hormones (most specifically through sex-based variations) would aid/hinder a musician's ability in a certain field. I turned my findings into a presentation at Celebration of Student Scholarship at MSU, and was met with enthusiasm on the project's work. I received a Certificate in Merit.

Project Dissemination:
2019 Morehead State University Celebration of Student Scholarship, April, 2019.
Awards and/or Honors:
Certificate of Merit, Morehead State University Celebration of Student Scholarship, April 24, 2019.
Post-Graduation Plans (Seniors only):
N/A

Wood, Austin

Major:
Music Education - Percussion
Faculty Mentor:
Michele Paise
Research/Project Title:
Movement in the Elementary General Music Classroom: Developmentally Appropriate Practice
Project Abstract/Summary:
N/A
Project Dissemination:
Planned to present at MSU Student Celebration but was ill and could not.
Awards and/or Honors:
N/A
Post-Graduation Plans (Seniors only):
In addition to using my findings to become a better teacher, I also plan to one day attend graduate school. By beginning a research project as an undergraduate student, I am preparing myself for the rigor of the master's degree.

SCHOOL OF ENGLISH, COMMUNICATION, MEDIA AND LANGUAGES

Milantoni, Silvia

Major:
Philosophy
Faculty Mentor:
Ann Andaloro
Research/Project Title:
Research and Creative Production Assistant for the Gender Studies Program
Project Abstract/Summary:
Silvia will coordinate the Judy Rodgers Art, Media and Writing Contest. She will create content for the Gender Studies Website. She will create a video for the Appalachian Studies conference. She will coordinate events for the Gender Studies Celebration and Masculinity panel discussion.
Project Dissemination:
MSU Gender Studies Website
Judy Rodgers Art, Media and Writing Competition
Sixteenth Annual Appalachian Studies Conference in Ashville, NC
Gender Studies Celebration and Masculinity panel discussion
Awards and/or Honors:
Judy Rogers contest award – first place for video
Post-Graduation Plans (Seniors only):
Silvia will move to New York City. Silvia wants to work with artificial intelligence in NYC, and then she will use her philosophical skills and research skills to build a strong team and recreate consciousness.

Neal, Leighann

Major:

Psychology/Legal Studies

Faculty Mentor:

Donell Murray

Research/Project Title:

The Social Integration of International Students: A Collection of Case Studies

Project Abstract/Summary:

A collection of case studies reveals the benefits of greater self-esteem, less anxiety, reduced stress and increased retention for international students involved in the International Peer Mentoring Program (IPMP) at Morehead State University (MSU) during the 2018-2019 school term. IPMP is a student organization at MSU, which was created in Fall 2016 by Dr. Donell Murray. This organization was designed to assist international students to become acclimated to university life and American culture through peer mentoring. Mentors and mentees are paired based on commonalities such as personality traits, hobbies and language skills. A series of self-reports were administered in the form of surveys and interviews conducted throughout this time frame. The hypothesis is that by giving international students a structured social outlet, they will benefit by developing social skills and adapting to their new environment during their study abroad experience.

Project Dissemination:

Leighann Neal, Instructor Donell Murray (April, 2019). *The Social Integration of International Students: A Collection of Case Studies.* Celebration of Student Scholarship, Morehead State University, Morehead, KY.

Awards and/or Honors:

Celebration of Student Scholarship Merit Award

Post-Graduation Plans (Seniors only):

Leighann hopes to follow a career in international law or as a legislative liaison.

Potts, Alexa

Major:

History/Legal Studies

Faculty Mentor:

Philip Krummrich

Research/Project Title:

Kentucky and Travel Writing

Project Abstract/Summary:

In the years since the first settlers of European descent came to Kentucky, the state has been visited by many outsiders, some of whom have written intriguing reactions to their observations and experiences. In this study, we will continue to survey the entire history of travel writing about Kentucky, with special emphasis on the periods when, for various reasons, more visitors wrote about the people and places they encountered in the Commonwealth.

The mentor and undergraduate research fellow co-presented on their research at the meeting of the Society for the Study of American Travel Writing in Denver, Colorado in November 2018. They have collaborated on an article to be published in a forthcoming book entitled *The Diary as Literature.* They have also written an article on European visitors who came to Kentucky in the years prior to the Civil War and shared their observations about slavery in the state with a mostly British readership. Ms. Potts will present an abbreviated version of this article at the Celebration of Student Scholarship in April 2019.

Project Dissemination:

Two Women Take Good Looks at Kentucky: The Diaries of Calista Cralle Long and Olive Dame Campbell, Society for the Study of American Travel Writing, Denver CO, November 2018.

When the Clash of Cultures is Like the Clash of Cymbals: Olive Dame Campbell's *Appalachian Travels.* Forthcoming in *The Diary as Literature,* ed. Angela Hooks.

The Half-Civilized Commonwealth: Travel Writing about Kentucky, 1830-1861. (We are currently preparing this article for submission to a journal; Ms. Potts will present an abbreviated version at the Celebration in April 2019.)

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

VonMann, Elizabeth

Major:

Creative Writing

Faculty Mentor:

Sylvia Henneberg

Research/Project Title:

Penning Consciousness: A Study of Women Poets in throughout American Literature

Project Abstract/Summary:

This project seeks to analyze three American women poets over the course of North American literary history in order to track the evolution of female poetry. The timeline will begin with H.D. and Gertrude Stein, and then will move on to Audre Lorde. These three women will be used as case studies to determine possible gaps in literary canon formation. The ways in which creativity and politics interrelate is at the crux of this work. The project assumes that each poet made a substantial and unique contribution to the evolution of both women's poetry and women's rights that is not sufficiently recognized.

Project Dissemination:

Von Mann, Elizabeth. (2019, April). *Penning Consciousness: A Study of Women Poets in throughout American Literature*, presentation, Celebration of Student Scholarship, Morehead, KY, April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Wallace, Madison

Major:

Strategic Communication

Faculty Mentor:

Morgan Getchell

Research/Project Title:

Information Seeking Behaviors of Stakeholders During a Livestock Contamination Event

Project Abstract/Summary:

In 2013, an outbreak of Porcine Epidemic Diarrhea Virus (PEDv) infected the United States hog population, killing more than 7 million piglets and resulting in $1.8 billion in losses for the pork industry. This outbreak demonstrated the need for improved communication with stakeholders during all phases of the crisis. The purpose of this study was to learn more about the information seeking behaviors of individuals during a crisis of this nature, and to test the impact of various message types on information seeking. Five focus groups were conducted with students at a regional university in the southeastern US. Participants were exposed to two video messages designed to replicate a television news story covering an outbreak of PEDv in the US swine population. Each video message contained different levels and types of information and emotional appeals. After viewing each video, participants were asked a series of questions about the videos and the information they contained. Results from the focus groups reveal several emergent themes. Participants showed a preference for the news story containing more information about the origin of the disease, the risk of human transmission, and the status of a vaccine/treatment. They also showed a preference for the video that made an emotional appeal by showing the personal impact to a swine farmer and his operation.

Project Dissemination:

Wallace, Madison L. and Getchell, Morgan (2019, April). *Saving Our Bacon: Examining Information Seeking Behaviors Following a Livestock Disease Outbreak,* Poster presentation, Celebration of Student Scholarship, Morehead, KY. April, 2019.

Wallace, Madison L. and Getchell, Morgan (2019, March). *Information Seeking Behaviors Following a Livestock Disease Outbreak,* International Crisis and Risk Communication Conference*,* Orlando, FL, March, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Madison Wallace will be attending the Graduate Program in Communication at the University of Kentucky. She has been awarded a teaching assistantship in the College of Communication and Information.

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

Anderson, Nicholas

Major:
Legal Studies
Faculty Mentor:
Leonard Joe Dunman
Research/Project Title:
Racial Jurisprudence Across the Commonwealth: A Biographical Sketch of Justice Edward C. O'Rear (1863-1961)
Project Abstract/Summary:
The research provided an overview of the late Kentucky Appellate Justice Edward Clay O'Rear who was a staunch proponent of the separation of the black and the white races. The fleshing out of this past justice and gubernatorial candidate gave a unique perspective on how race-based segregation was legally championed throughout the nineteenth century and the first half of the twentieth century. The overview of O'Rear is not conclusive. His service on the Kentucky Appellate Court ranged from 1900-1911 so finding primary sources are scholarly articles pertinent to his time in office has been challenging. Though O'Rear was a white supremist by all accounts, his Christian beliefs commingled with his political stature allowed for him to remain a prominent figure in society until his death in 1961. With further inquiries into O'Rear and other political figures of the era across the Commonwealth and South, a broader understanding of how racial jurisprudence subsisted through the decades comes to light.
Project Dissemination:
2019 Morehead State University Celebration of Student Scholarship.
Awards and/or Honors:
N/A
Post-Graduation Plans (Seniors only):
N/A

Baker, Nathaniel

Major:
History
Faculty Mentor:
Adrian Mandzy
Research/Project Title:
Current Research in Battlefield Studies
Project Abstract/Summary:
Over the course of the year, Mr. Baker researched various facets of battlefield archaeology, preservation and public history. Building on the research he began the previous year, Nate worked on analysis of the 1864 Battle of the Crater and the 1813 Battle of Leipzig. The research project allowed the student to gain first-hand knowledge of basic research and allowed him to develop his interest in the field of public history.
Project Dissemination:
Building a 3-D Model of the Battle of the Crater, Poster presentation, 10th Biennial International Fields of Conflict Conference, Mashantucket Pequot Museum, 26-30 September 2018.
Created a Social Media Facebook Page, Leipzig Dig. To date, the page has been visited more than 10,000 times.
Leipzig Dig: Applying Public History Methodologies through a Social Media Presence, Oral presentation, Celebration of Student Scholarship, 24, April 2019.
Awards and/or Honors:
2019 Department of History, Philosophy, Politics, International Studies and Legal Studies student award recipient – Outstanding Undergraduate Student in Public History.
Post-Graduation Plans (Seniors only):
Mr. Baker is planning on pursuing a graduate degree in public history at Northern Kentucky University.

Brockett, Cristen

Major:

History

Faculty Mentor:

Alana Scott

Research/Project Title:

The Impact of Quaker Pacifism on American History

Project Abstract/Summary:

While it is known that Quakers have been in America since its founding, the Quaker people themselves have yet to find the credit they deserve for helping build the foundation for modern America. What actions done by Quakers in early American society helped to shape America into the country it is today? With the ratification of the Progressive amendments (16, 17, 18, and 19) it's clear to see that Quaker ideals eventually became the keypoints of the Progressive Movement in the 19th to mid 20th century.

Using speeches done by Quaker women during the 17th century, a collection of Quaker behavior both in England and in the English colonies, along with official court records, this paper will examine the various instances in which Quakers, either directly or indirectly, affected the outcome of what was to become the United States of America. For example, Margaret Fells' primary source *Women Speaking Justified* provides a useful perspective into the views of Quaker women. Adrian T. Davies' book *The Quakers in English Society: 1655-1725,* highlights the behavior and religious beliefs involved in the daily lives of the Quaker peoples. Doris Mclean Bates' *The Quakers and Their War on Resistance* gives a unique insight on the activities of the Quakers once integrated into American society.

Project Dissemination:

Cristen presented her paper at the Celebration of Student Scholarship on April 24, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Buschman, Sarah M.

Major:

International Studies/Spanish

Faculty Mentor:

James Masterson

Research/Project Title:

Immigration Flows and the Rise of Ethno-nationalism in Europe

Project Abstract/Summary:

Using panel data from the 2017 Eurobarometer survey, this research aims to understand the impact that the recent surge of immigration flows into European countries has had on a rise in nationalist and anti-immigration attitudes.

The research found that there was not statistical difference in the attitudes of non-European immigrants among nationalists in low immigration countries and high immigrations countries. However, attitudes towards non-European immigrants improved among non-nationalists in high immigrant countries compared to those in low immigrant countries. As a result, we found that increasing levels of immigration levels tend to improve attitudes of non-European immigrants among those that exhibit low nationalists tendencies. Student built databases and conducted literature review, as well as built presentations in the spring semesters. Student finished paper in the fall semester.

Project Dissemination:

Exhibition: Celebration of Student Scholarship, Morehead State University, April 25, 2018.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Student graduated in December.

Cains, Ashley

Major:

Criminology

Faculty Mentor:

Elizabeth Perkins

Research/Project Title:

Animal Assisted Therapy

Project Abstract/Summary:

Research suggests that not only does the presence of dogs have a calming effect on humans, but that petting them actually lowers blood pressure and anxiety among other benefits (Vormbrock & Grossberg, 1988). Only recently has the value of dogs and other animals as emotional support (animal assisted therapy), begun to be realized in courtrooms, schools, therapeutic facilities, jails/prisons, and psychiatric hospitals. My current job title is a therapeutic dog trainer for a juvenile justice residential treatment facility and I have seen firsthand how a therapy dog works their "magic" with juveniles that are having PTSD related issues, manic episodes, depression, and anxiety.

Project Dissemination:

Cains, Ashley, and Perkins, Elizabeth. (2019, April). *Animal Assisted Therapy*, Poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Ashley is in the process of interviewing with several potential employers. She is also applying to the Sociology Graduate Program.

Collins, Tessa

Major:

History

Faculty Mentor:

Tom Kiffmeyer

Research/Project Title:

Feminism in Appalachia: Origins and Evolution

Project Abstract/Summary:

Frequently labeled "Second Wave Feminism," the struggle for women's equality in the late 20th century goes beyond the fight for political rights (suffrage) and embraces issues of social and economic justice. Motivated by a call for basic human rights, this "Second Wave" hopes to fulfill the true meaning of an equal, democratic society. While important, the focus on social and economic justice was not the driving force behind "feminism in Appalachia." Faced with family disintegration, as well as economic displacement, women's struggles in the mountain region focused first and foremost on family maintenance. Women, trying to hold their homes and families together, embraced a version of women's rights that stressed family and community welfare. Only after achieving this more immediate concern did mountain women address the ideological concerns posted by question of "democracy" and "equality."

This paper is important because it pushed the historiography of social movements beyond the political and ideological arena. By focusing on the origins of "Appalachian Feminism" this work provides an additional analytical tool with which historians can guage the causes and consequences of civil rights movements.

Project Dissemination:

Celebration of Student Scholarship, Morehead State University, Morehead, KY.

Posters at the Capitol, Frankfort, KY.

Awards and/or Honors:

Ms. Collins is a member of Kappa Delta and served on council as Vice President of Public Relations 2016-2017, and served on the Standards Board. Due to her efforts as Vice President of Public Relations the Kappa Delta-Delta Tau chapter earned the “Excellence in Public Relations” and “Excellence in Alumnae Outreach” Awards.

Tessa was initiated in Order of Omega this spring, which is an honors fraternity that initiates the top 3% of all Greek life. In Order of Omega, she serves as secretary. Additionally, Ms. Collins is secretary in the Cicero Society and she is actively involved in the Historical Society. Tessa is employed on campus as a SOAR Orientation Leader as well. Last year, Tessa won the “People’s Choice Award” for her academic poster on “Comfort Women” at the Celebration of Student Scholarship Spring 2018.

Post-Graduation Plans (Seniors only):

Ms. Collins hopes to earn a graduate degree in history following her graduation from Morehead State University. This research project, because it included primary research as well as oral presentations, will significantly aid her in achieving that goal. Additionally, this research experience will enhance Ms. Tessa Collins competitiveness when seeking admission into the American history Ph.D. program at University of Kentucky.

Coomer, Casey

Major:

Nursing

Faculty Mentor:

Edward Breschel

Research/Project Title:

Bifurcation of Religious Affiliation with Education

Project Abstract/Summary:

Using the 2008 General Social Survey, we find that, with rising education, there is both a trend toward both lack of affiliation, but stronger affiliation if religious affiliation is not lost. Student used crosstabulation and chi-square to examine relationships between a number of variables relevant to this topic.

Project Dissemination:

Student presented a poster at the Celebration of Student Scholarship this April at Morehead State University.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

NA

Cooper, Matthew

Major:

Government

Faculty Mentor:

James Masterson

Research/Project Title:

School Funding and Educational Achievement in Rural Kentucky: A Multi-Level Analysis

Project Abstract/Summary:

A multi-level analysis including 120 districts in Kentucky investigating the effect of three spending measures (overall, teacher, and technology) upon achievement (ACT and KPREP) while controlling for various school and county attributes. The study found that increases in spending per student are associated with increases in average KPREP ad ACT scores at the school level. Increases in attendance rates, and enrollment, as well as increases in student teacher ratio, were also found to be contributors to improved standardized test scores. Last, reductions in the percentage of students on free and reduced lunch contribute towards improvements in the test scores. Student built a database and conducted literature review, as well as built a presentation in the spring semesters. Student finished paper in the fall semester.

Project Dissemination:

Presented at the Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Student graduated in December.

Fink, Sarah

Major:

Government

Faculty Mentor:

Michael Hail

Research/Project Title:

Federalism and American Election Security

Project Abstract/Summary:

An examination of government organization and the relationship to national security will be the primary focus of this research. The focus of this research was on the examination of the American election infrastructure with a specific look at Kentucky's election security. This research was used to determine the most secure national system, while still protecting federalism. An in-depth comparison of both a centralized electronic system and a decentralized paper system were used to determine policy recommendations to increase American election security.

Project Dissemination:

Research findings were presented at the Kentucky Political Science Association, and the Celebration of Student Scholarship.

Awards and/or Honors:

This research was nominated for the Rafai Award for best undergraduate paper at KPSA and won the Outstanding Poster Presentation in the Caudill College at the Celebration of Student Scholarship.

Post-Graduation Plans (Seniors only):

Attend graduate school at Morehead State University and enroll in the Master of Public Administration program.

Gabbard, Michala Jones

Major:

Legal Studies

Faculty Mentor:

Dianna Murphy

Research/Project Title:

Barriers & Solutions: An Effective Process to Efficiently Settle the Small Pro se Estate

Project Abstract/Summary:

Prof. Murphy has been asked to assist a couple of Eastern Kentucky's district court judges in developing a process to more effectively and efficiently address concerns related to the increased numbers of pro se petitioners in probate proceedings, specifically those with minimal estates who cannot afford an attorney.

Ms. Jones will continue to assist Prof. Murphy with the following research:

- More fully analyze the data searches from the Kentucky Administrative Office of the Courts (AOC) to identify the length of time that a pro se probate case takes versus those where petitioners have attorneys in Eastern Kentucky counties.
- Create a survey to administer to the court clerks that assesses the most common unmet probate needs and related questions asked to them.
- Survey or interview state district court judges to identify the most common unmet needs and barriers they observe regarding small estates with no attorney.
- Work with judges and clerks to review and assess the effectiveness of Ms. Jones's newly drafted probate forms in alleviating the barriers to proper completion without legal assistance.
- Develop clear instructions to facilitate the accurate completion of the new forms.
- Review the local probate court rules to assess needed changes for consistency with the rules.

Project Dissemination:

Presented at the 2019 Celebration of Student Scholarship Day.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Michala Gabbard has been offered a full scholarship to Baylor Law School in Texas.

Gevedon, Shelby

Major:

Government

Faculty Mentor:

Michael Hail

Research/Project Title:

Federalism and Homeland Security: Examining Privacy Issues of Personal Devices and Management of Security Policy

Project Abstract/Summary:

The focus of this research is an examination of privacy, federalism, and government organization for intergovernmental issues and their relationship to national security. Exploring the operation and relationship of intergovernmental organizations in the policy process includes exploring cases and building data on inter-agency organization, policy and regulatory interactions. Case studies will be regulations and privacy for personal technology devices. These will be assessed comparatively within the U.S. system of federalism.

Project Dissemination:

Research findings were presented at the Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Haggard, Caitlin

Major:

Sociology

Faculty Mentor:

Bernadette Barton

Research/Project Title:

Men’s Awareness of Toxic Masculinity

Project Abstract/Summary:

Hegemonic masculinity, more colloquially referred to as toxic masculinity, is a set of practices that promote the dominant social position of men, and the subordinate social position of women. Toxic masculinity socializes men to see masculinity itself in hierarchical terms, ranking men according to how well they embody and present as the alpha male: the toughest, strongest, and least emotional. Researchers find that toxic masculinity is responsible for a number of negative social consequences including dangerous risk-taking, acts of violence, and the numbing of empathy. Drawing on interviews with 10 male millennials, this research explores how aware men are of the concept and constraints of toxic masculinity while in college. We theorize time spent getting an undergraduate degree as a key turning point in men’s self-conception. Many men get to college and are enlightened by the openness and diversity among campus. Data illustrates that young men have varying degrees of understanding of toxic masculinity, particularly as regards their own behavior. We find that subjects have an easier time seeing the negative consequences of toxic masculinity in others than themselves.

Project Dissemination:

Haggard, Caitlin and Professor, Bernadette Barton. (2019). Men’s Awareness of Toxic Masculinity, Poster presentation, Posters at the Capitol, Frankfort, KY.

Haggard, Caitlin and Professor, Bernadette Barton. (2019). Men’s Awareness of Toxic Masculinity, Presentation, Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

Selected Outstanding Sociology Student.

Post-Graduation Plans (Seniors only):

N/A

Hester, Shelby

Major:

History

Faculty Mentor:

Thomas Kiffmeyer

Research/Project Title:

Ending Suffering with Sufferage: 100 Years of Women at the Voting Booth

Project Abstract/Summary:

Because 2020 marks the 100th anniversary of women's suffrage, Shelby Hester, a student interested in "Public History," decided to focus on a "display" for her project which focused on Laura Clay's motivations and efforts to gain suffrage for women. Motivated by her father's work to abolish slavery as well as the "second-class" status of her mother, and making the link between the place of slaves and the place of women in antebellum Kentucky society, Clay became active in the Kentucky Equal Rights Association. Still, betraying her regional, southern identity, Clay was an advocate of "states' rights" and believed that the suffrage issue should not be decided on a national, federal constitutional level. Nevertheless, after women gained the right to vote on the national level, Clay remained politically active and actually ran for the office of president of the United States in 1920.

Project Dissemination:

Posters at the Capitol – Frankfort, KY.

Ms. Hester experienced a death in her family and because of that she missed the Celebration of Student Scholarship at Morehead State University. Nevertheless, Ms. Hester plans on designing and completing a poster that highlights the past 100 years of women's suffrage that she hopes to display on campus (or perhaps at the Morehead History Museum) the week of the 2020 election.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Huffman, Molli

Major:

Sociology-Criminology/Philosophy

Faculty Mentor:

Rebecca Katz

Research/Project Title:

Queer Victims and Offenders in the Holocaust

Project Abstract/Summary:

This research exposed the sexual twilight zone of Nazi heterosexism and homophobia ideologies resulted in criminalization, torture, murder, and medical experimentation even as male and female German soldiers and concentration camp guards were engaged in same-sex relationships. Queer concentration camp victims developed and maintained loving relationships with other allegedly heterosexual camp members under conditions of forced labor and near starvation. Rape and the sexual molestation of young men and boys was pronounced in the camps and perpetrated by camp trustees as well as guards. Only one bisexual female German guard was uncovered in this research and she participated in the torture and murder of concentration camp victims.

Project Dissemination:

Critical Criminology Meeting at Eastern Michigan University in Ann Arbor Michigan, April 2019. Ms. Huffman also presented the paper at the Undergraduate Research Colloquium. We are continuing to expand the work to include contemporary prisons using LGBTQ former prisoner memoirs. We plan to develop a proposal for a book on LGBTQ victimization and offering.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Jenkins, Taylor

Major:

Pre-Physician Assistant/Government

Faculty Mentor:

Michael Hail

Research/Project Title:

Federalism and Security: Examining Pharmaceutical Issues of Administration and Public Management of Security Policy in the U.S. System of Intergovernmental Relations

Project Abstract/Summary:

An examination of pharmaceutical policy and state and local government organizations and the relationship to national security will be the primary focus of this research. Exploring the operation and relationship of intergovernmental organizations in the policy process will include exploring cases and building data on inter-agency organization and policy and regulatory interactions. There will be survey and case study research conducted and these will be assessed comparatively within the U.S. system of federalism.

Project Dissemination:

Research findings were presented at the Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Linneman, Christopher

Major:

History

Faculty Mentor:

Adrian Mandzy

Research/Project Title:

Current Research in Battlefield Studies

Project Abstract/Summary:

Over the course of the year, Mr. Linneman researched various facets of battlefield archaeology, preservation and public history. Building on the research he began the previous year, Chris worked on analysis of the 1864 Battle of the Crater, the 1813 Battle of Leipzig and the 1943 Nazi slave labor camp at Skoliv. The research project allowed the student to gain first-hand knowledge of basic research and allowed him to develop his interest in the field of public history.

Project Dissemination:

Building a 3-D Model of the Battle of the Crater, Poster presentation, 10th Biennial International Fields of Conflict Conference, Mashantucket Pequot Museum, 26-30 September 2018.

The Battle of the Crater Artifact Study, Paper presentation, Celebration of Student Scholarship, 24 April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Mr. Linneman wants to pursue a career in public history.

Parsons, Jason B.

Major:

IST/Political Science

Faculty Mentor:

Ric Caric

Research/Project Title:

Multicultural Democracy and Its Opponents: Investigations into Contemporary American Politics

Project Abstract/Summary:

This project investigates a number of theoretical, historical and cultural themes in current American politics. These include the impact of civil rights rhetoric on the sense of American history among the “multicultural’ left and “traditionalist” conservatives, the monumental character of the cultural transformations involved with feminism, gay rights and atheism, the development of a conservative “counter-culture,” the cultural ambiguities of American big business, and the declining sense of inheritance on both sides of the political divide. In other words, this project depends on the full range of the faculty member’s expertise in political science/political theory, American history, and cultural studies.

Project Dissemination:

N/A

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Quillen, Alexandra

Major:

Government/Math

Faculty Mentor:

Jonathan Pidluzny

Research/Project Title:

Two Nations, Two Founding Arguments, One State: The Intellectual Roots of the Israel Palestine Problem

Project Abstract/Summary:

One of the most controversial geopolitical issues in the world today is the relationship between Israel and Arab Palestinians. Even before Israel’s official establishment as a recognized nation-state in 1948, Jewish immigration to Palestine has caused anxiety in Muslim communities across the globe. At least since the 1948 war, Palestinians have endured often harsh treatment from Israeli security forces, including expulsion from their historical homeland (and homes) in high numbers. As a consequence of the 1948 and 1967 wars, hundreds of thousands of Palestinian refugees live under occupation today, giving rise to one of the most difficult problems in international relations: how to resolve tension between Israel and Palestine given both nations have strong claims to the same geographical territory as a basis for their nation state.

Surprisingly, in spite of all the attention the Israel-Palestine problem has received, most treatments fail fully to consider each party’s powerful political claims. Though Zionism and Islamist exponents of Palestinian statehood represent different religions, the intricacies of their claims and their deeply religious sentiments align in surprising ways. Additionally, much like the religious claims to the land, powerful factions on both sides are making secular claims to justify their claims to the land. A great deal can be learned by considering the leading political theorists on both sides. Focusing on the writings of prominent Zionists at the turn of the century (in particular, Theodor Herzl and Ze’ev Jabotinsky), and leading exponents of Palestinian independence (including Yasser Arafat and Hamas ideologues), this project aims to provide a more detailed and thorough account of each party’s claims. This project received generous support from MSU’s Undergraduate Research Program.

Project Dissemination:

Alexandra Quillen, *Two Nations, Two Founding Arguments, One State: The Intellectual Roots of The Israel Palestine Problem*, Presentation, 2019 Celebration of Student Scholarship, Morehead, KY, 24 April, 2019.

Awards and/or Honors:

Admitted to Hertog Foundation Summer Studies Program, and AEI Honors Program, for Summer 2018 – both in Washington, DC.

Post-Graduation Plans (Seniors only):

N/A

COLLEGE OF SCIENCE

DEPARTMENT OF AGRICULTURAL SCIENCES

Banks, Brandi

Major:
Agricultural Science

Faculty Mentor:
Patricia Harrelson

Research/Project Title:
Use of G-MANNA-CEL Mineral to Mitigate Fescue Toxicosis in Beef Cattle

Project Abstract/Summary:
The objective of this study was to determine if the addition of a hydrolyzed yeast product would alleviate the symptoms of fescue toxicosis in beef cattle. Thirty-eight Angus cow-calf pairs were stratified by cow age and body weight then randomly allotted to one of two treatments; control mineral (CON) or hydrolyzed yeast mineral (HYM). Cattle in both groups were allowed access to mineral for 126 days while they grazed the same eight pastures (1.21 hectares each) in a rotational pattern. Mineral was provided at a target rate of 4 ounces per head per day. Each pasture was grazed by cattle groups for 7 days. Mixed grass pastures containing tall fescue were utilized and evaluated for endophyte level prior to the start of the project. Due to pasture endophyte level variability (44% – 73% endophyte), both groups of cattle rotationally grazed each pasture at least 2 times starting on June 1st and ending on October 5th. Prior to entering a new pasture weekly, cows were weighed and assigned a body condition score (BCS) and hair coat score (HC) by two independent, trained personnel. Cow behavior was measured every 15 minutes within a 2 hour block weekly. Percentage of cows active or inactive, outside or inside was recorded. Data were analyzed using the MIXED procedure of SAS. Cow body weight change was unaffected by treatment ($P > 0.23$). Cow BCS significantly increased in HYM vs. CON cows (0.4 vs. 0.1; $P = 0.02$; SEM = 0.1) through the 126 day project. No treatment effect was observed on HC ($P > 0.19$). Cow behavior was impacted by treatment, as HYM cows spent more time outside compared to CON cows ($P < 0.01$). Results of this trial suggest that HYM cows may have experienced less heat stress as a result of fescue toxicosis as they were willing to spend more time outside and increased BCS. Research was supported in part by Gro-Tec, Inc. and by the Morehead State University Undergraduate Research Fellowship Program.

Project Dissemination:
Poster presentation at Celebration of Student Scholarship, April 2019.

Awards and/or Honors:
Certificate of Merit for Poster presentation at Celebration of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):
N/A

Clark, Caitlyn

Major:
Agribusiness

Faculty Mentor:
Vijay Subramaniam

Research/Project Title:
Economic Analysis of Solar Panel Installation: A Case Study at Derrickson Agriculture Complex, Morehead State University

Project Abstract/Summary:
Our study shows that the Vet-Tech building uses 183,160 kW per year and it costs about $17,500/year to MSU. We need 8 pieces of 20 kWh solar panels which can produce 160 kWh (13 kWh more than currently used in this building). Required roof space is 10,664 sq. ft but we are not sue if the roof is strong enough to handle that much weight. If not we need to consider ground based installation.

Purchasing solar panels without government tax credit will not be profitable as the required benefits are $27,904 per year. Government tax credit reduces that required benefit to $19,352/year but it is still greater than our current bill. At the same time, we are not sure how the tax credit will help our university since we do not pay federal tax. We assume that our electricity bill may increase at least 3% per year (including inflation), and the expected total payment for the next 25 years (present value of future payments) is $344,540, which is much higher than the money we need to pay for the solar panels. In this case, solar panels can be a good investment (assume we can benefit from the federal tax credit). It is possible that the cost of solar panels may decrease significantly in the near future. As a result, leasing solar panels can be a better option. Therefore, it is necessary to conduct a proper benefit cost analysis for both leasing and purchasing options before we make a final decision.

Project Dissemination:

Clark, Caitlyn J. and Subramaniam, Vijay (2019). *Economic Analysis of Solar Panel Installation: A Case Study at Derrickson Agriculture Complex, Morehead State University*, Poster presentation, Celebration of Student Scholarship, Morehead, KY, April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Durham, Morgan L.

Major:

Agricultural/Agribusiness

Faculty Mentor:

Vijay Subramaniam

Research/Project Title:

Assessing the Economic Feasibility of Water Harvesting at Morehead State University Farm (Derrickson Agricultural Complex)

Project Abstract/Summary:

Water harvesting provides many benefits, monetary and non-monetary. Although the initial investment in these many systems may not equal the monetary benefits provided based off municipal water savings, the environmental benefits justify these investments. The reduction of erosion and storm water run off associated with these investments are essential to maintaining productive soil and water quality, which are necessary to maintain productive agricultural land. In addition to environmental benefits of these investments is the benefit of technology transfer. The educational outreach associated with these investments will provide additional benefits to those who adopt water-harvesting practices, which should also be considered when justifying these investments. The application of the harvested water may also provide opportunity to enter niche markets, providing additional monetary benefits. When considering all of these benefits associated with water harvesting, the investment in these systems being implemented at the Derrickson Agricultural Complex are more than justified.

Project Dissemination:

Durham, Morgan and Vijay Subramaniam (2019). *Economic Analysis of Water Harvesting at Derrickson Agriculture Complex, Morehead State University*, Poster presentation, Celebration of Student Scholarship, Morehead, KY. April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Graduated in May 2019.

Scott, Johnna

Major:

Agricultural Science

Faculty Mentor:

Patricia Harrelson

Research/Project Title:

Use of G-MANNA-CEL Mineral to Mitigate Fescue Toxicosis in Beef Cattle

Project Abstract/Summary:

The objective of this study was to determine if the addition of a hydrolyzed yeast product would alleviate the symptoms of fescue toxicosis in beef cattle. Thirty-eight Angus cow-calf pairs were stratified by cow age and body weight then randomly allotted to one of two treatments; control mineral (CON) or hydrolyzed yeast mineral (HYM). Cattle in both groups were allowed access to mineral for 126 days while they grazed the same eight pastures (1.21 hectares each) in a rotational pattern. Mineral was provided at a target rate of 4 ounces per head per day. Each pasture was grazed by cattle groups for 7 days. Mixed grass pastures containing tall fescue were utilized and evaluated for endophyte level prior to the start of the project. Due to pasture endophyte level variability (44% – 73% endophyte), both groups of cattle rotationally grazed each pasture at least 2 times starting on June 1st and ending on October 5th. Prior to entering a new pasture weekly, cows were weighed and assigned a body condition score (BCS) and hair coat score (HC) by two independent, trained personnel. Cow behavior was measured every 15 minutes within a 2 hour block weekly. Percentage of cows active or inactive, outside or inside was recorded. Data were analyzed using the MIXED procedure of SAS. Cow body weight change was unaffected by treatment ($P > 0.23$). Cow BCS significantly increased in HYM vs. CON cows (0.4 vs. 0.1; $P = 0.02$; SEM = 0.1) through the 126 day project. No treatment effect was observed on HC ($P > 0.19$). Cow behavior was impacted by treatment, as HYM cows spent more time outside compared to CON cows ($P < 0.01$). Results of this trial suggest that HYM cows may have experienced less heat stress as a result of fescue toxicosis as they were willing to spend more time outside and increased BCS. Research was supported in part by Gro-Tec, Inc. and by the Morehead State University Undergraduate Research Fellowship Program.

Project Dissemination:

Poster presentation at Celebration of Student Scholarship, April 2019.

Awards and/or Honors:

Certificate of Merit for poster presentation at Celebration of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):

Continue education to apply to veterinary school.

Sellinger, Emory

Major:
Agricultural Science

Faculty Mentor:
Patricia Harrelson

Research/Project Title:
Use of G-MANNA-CEL Mineral to Mitigate Fescue Toxicosis in Beef Cattle

Project Abstract/Summary:
The objective of this study was to determine if the addition of a hydrolyzed yeast product would alleviate the symptoms of fescue toxicosis in beef cattle. Thirty-eight Angus cow-calf pairs were stratified by cow age and body weight then randomly allotted to one of two treatments; control mineral (CON) or hydrolyzed yeast mineral (HYM). Cattle in both groups were allowed access to mineral for 126 days while they grazed the same eight pastures (1.21 hectares each) in a rotational pattern. Mineral was provided at a target rate of 4 ounces per head per day. Each pasture was grazed by cattle groups for 7 days. Mixed grass pastures containing tall fescue were utilized and evaluated for endophyte level prior to the start of the project. Due to pasture endophyte level variability (44% – 73% endophyte), both groups of cattle rotationally grazed each pasture at least 2 times starting on June 1st and ending on October 5th. Prior to entering a new pasture weekly, cows were weighed and assigned a body condition score (BCS) and hair coat score (HC) by two independent, trained personnel. Cow behavior was measured every 15 minutes within a 2 hour block weekly. Percentage of cows active or inactive, outside or inside was recorded. Data were analyzed using the MIXED procedure of SAS. Cow body weight change was unaffected by treatment ($P > 0.23$). Cow BCS significantly increased in HYM vs. CON cows (0.4 vs. 0.1; $P = 0.02$; SEM = 0.1) through the 126 day project. No treatment effect was observed on HC ($P > 0.19$). Cow behavior was impacted by treatment, as HYM cows spent more time outside compared to CON cows ($P < 0.01$). Results of this trial suggest that HYM cows may have experienced less heat stress as a result of fescue toxicosis as they were willing to spend more time outside and increased BCS. Research was supported in part by Gro-Tec, Inc. and by the Morehead State University Undergraduate Research Fellowship Program.

Project Dissemination:
Poster presentation at Celebration of Student Scholarship, April 2019.

Awards and/or Honors:
Certificate of Merit for poster presentation at Celebration of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):
N/A

DEPARTMENT OF BIOLOGY AND CHEMISTRY

Blanton, Sydney

Major:
Biomedical Sciences

Faculty Mentor:
Geoffrey Gearner

Research/Project Title:
The Detection of Antibiotic Resistant Bacteria in the Triplett Creek Watershed

Project Abstract/Summary:
The purpose of this study was to identify the presence of antibiotic resistant bacteria in the Triplett Creek Watershed (TCW) in Rowan County, Kentucky. We tested 12 sites in the watershed for the presence of nine antibiotic resistant genes: *TetW, TetO, SulI, SulII, ereA, msrA/B, blaTEM, blaSHV,* and *blaCMY,* as well as a marker for *E. coli*, *uidA.* We used DNA extraction, Nanodrop spectroscopy, polymerase chain reaction, and agarose gel electrophoresis to test for the presence of these genes. We found a total of 43 amplified products with 11/12 sites detected for *msrA/B*, 10/12 sites detected for *uidA*, 7/12 sites detected for *sulII*, 6/12 sites detected for *blaTEM*, 5/12 sites detected for *ereA* and *sulI*, 3/12 sites detected for *blaSHV*, and 2/12 sites detected for *blaCMY*. There were no PCR products for antibiotic-resistant genes *tetO*, *tetW*, and *blaTEM* detected.

Project Dissemination:

Tran, M., Blanton, S., Gearner, G. (2019). *The Detection of Antibiotic Resistant Bacteria in the Triplett Creek Watershed*. Celebration of Student Scholarship, Morehead State University, Morehead, KY, 24, April 2019.

Awards and/or Honors:

Award of Exceptional Merit at the Celebration of Student Scholarship.

Post-Graduation Plans (Seniors only):

N/A

Branham, Kathryn

Major:

Biology

Faculty Mentor:

Sean O'Keefe

Research/Project Title:

Beetle Diversity: A Comparison of the Biodiversity of Ecotone vs. Woods Surrounding Morehead State's Eagle Lake

Project Abstract/Summary:

Biodiversity is an important indicator of health within an ecosystem. Coleoptera (beetles), which comprise twenty percent of known, described species, inhabit a wide variety of habitat types making them excellent study organisms to address biodiversity – related questions. To study this phenomenon, we compared the biodiversity of Coleoptera within Morehead State University's Eagle Lake. We collected leaf-litter samples from wooded habitat and its associated ecotone between the wooded area and more disturbed, open field surrounding Eagle Lake to assess whether there were any differences in biodiversity richness and abundance. Through our data we discovered that the leaf litter from the wooded regions of Eagle Lake featured many morphologically diverse organisms, and the inhabitants of the forest floor approaching the ecotone can change dramatically over a distance of only a few meters. When data was compared to levels of other indicator species of mites and ants, we were able to gain an overall understanding of the biodiversity of the area and its sustainability for local wildlife.

Project Dissemination:

Presented as a poster at the 2019 Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Attend medical school.

Brewer, Hannah E.

Major:

Biology

Faculty Mentor:

Wilson Gonzalez-Espada

Robert Boram

Research/Project Title:

Factors Associated with Students Leaving Quantitative STEM Majors: A Case Study

Project Abstract/Summary:

Graduates from science, technology, mathematics and engineering (STEM) majors are essential for a large number of professions and for a strong economy. The process of selecting and changing any major, including STEM, is a deeply personal process that is influenced by family, friends, mentors, and discipline related experiences. Prior research suggested that more than half of the entering college freshmen who declare STEM majors switch out of them, especially in quantitative disciplines, such as mathematics, physics, chemistry, and engineering. This is described in the literature as STEM attrition. Many factors have been statistically associated with STEM attrition, including gender, race, high school preparation, faculty interactions, depth and pacing of college science courses, math ability, and others.

This IRB-approved study has four research questions: (a) What factors contributed to the participants' decision to select their original major? (b) What key events participants experienced in their original major? (c) What factors contributed to the participants' decision to switch? and (d) To what extent are students satisfied with their decision to switch out? The study used a case study approach and mixed-methods methodologies, including a demographic survey by participants and a control group (graduating seniors in Q-STEM majors) and semi-structured interviews. Sampling was based on convenience, and consisted of 10 Q-STEM switchers and 7 senior Q-STEM majors attending Morehead State University. Survey data was summarized using descriptive statistics and interview data was recorded, transcribed, and analyzed using standard qualitative techniques to identify broad themes and rich, thick descriptions of Q-STEM switching occurrences and the rationale behind them.

Data analysis uncovered strong emotions that were part of the participants' decision-making process. Overall, interest in Q-STEM among high school graduates was associated with passion for the discipline, teacher encouragement, and success in academic coursework. Upon entering college, students faced courses that are more difficult, higher-level mathematics, and college faculty who were perceived as less supportive and who emphasized passive teaching strategies. As a result, students felt inadequate, unprepared and overwhelmed. A naïve understanding of study-habits, the expectations of Q-STEM preparation, and test-taking strategies may have worsen the students' negative experiences. Future plans include expanding the literature review, interviewing more students, and developing a model of Q-STEM retention that can provide research-based and implementable strategies.

Project Dissemination:

A manuscript will be prepared during the summer of 2019 to be submitted to the Journal of the Kentucky Academy of Science.

Brewer, H. E.*, Boram, R., & González-Espada, W. J. (2019). *Factors Associated with Students Leaving Quantitative STEM Majors. A Case Study*. Poster presentation, Annual Celebration of Student Scholarship, Morehead State University, 24 April, Morehead, KY.

Brewer, H. E.*, Gonzalez-Espada, W. J., & Robert D. Boram, R. D. (2019). *Why Do Students Leave Quantitative STEM Majors? Perspectives from Eastern Kentucky*. Oral presentation, Annual National Conference on Undergraduate Research, Kennesaw State University, 11 April, Kennesaw, GA.

Brewer, H. E.*, Boram, R., & Gonzalez-Espada, W. J. (2019). *Farewell: Switching from Math to Non-STEM Majors.* Oral presentation, Annual Meeting of the Kentucky Section of the Mathematical Association of America. Centre College, 30 March, Danville, KY.

Brewer, H. E.*, González-Espada, W. J., & Boram, R. (2019). *Leaving Physical Science Behind: An Exploration of Why Undergraduates Switch to Non-science Majors*. Oral presentation, Spring Meeting of the Kentucky Association of Physics Teachers, Bellarmine University, March 9, Louisville, KY.

Brewer, H. E.*, Gonzalez-Espada, W. J., & Boram, R. (2019). *Factors Associated with Students Leaving Quantitative STEM Majors. A Case Study.* Poster presentation, 18th Annual Posters-at-the-Capitol, Kentucky Posters-at-the-Capitol State Organizing Committee, February 21, Frankfort, KY.

Brewer, H. E.*, Gonzalez-Espada, W. J., & Boram, R. (2018). *Science Regret: Why College Students Switch Out of Science Majors?* Workshops, Annual Meeting of the Kentucky Science Teachers Association, Lexington Conference Center, November 9, Lexington, KY

Brewer, H. E.*, Gonzalez-Espada, W. J., & Boram, R. (2018). *Why Do Students Leave Quantitative STEM Majors?* Oral presentation, annual meeting of Kentucky Academy of Science, November 3, Western Kentucky University, Bowling Green, KY.

Awards and/or Honors:

Hannah Brewer – Oral Presentation – Science Education – Pine Ridge, KY.

Post-Graduation Plans (Seniors only):

Hannah will not graduate until next year. Preliminary plans include considering graduate school or obtaining an employment position as a biology teacher in Eastern Kentucky.

Dale, Jesseca

Major:

Biology

Faculty Mentor:

Allen C. Risk

Research/Project Title:

Arboreal and Terrestrial Lichen and Bryophyte Species Richness in the Eagle Lake Watershed, Rowan County, Kentucky

Project Abstract/Summary:

A lichen is a symbiotic relationship between algae and fungi. Bryophytes are non-vascular plants consisting of mosses, liverworts, and hornworts. These organisms can conduct photosynthesis, indicate pollution, provide building material for animals, and can be locally diverse in a forest. Besides their asthetic appeal in nature, lichens have had a significant impact throughout human history. Lichens have been used as food, dye for clothing, medicines, and decoration. Three 20 x 20 plots were established to assess arboreal and terrestrial lichen and bryophyte species richness in the Eagle Lake watershed. A white oak was chosen to center each plot and doubled rope technique was used to access the trunk and crowns of understory and overstory trees. Samples were collected from soil, rocks, woody debris, understory shrubs/trees, and a single overstory tree within each plot. Preliminary results for the arboreal zone, in study plot 1, consisted of two liverwort, five moss, and 14 different lichen species. The terrestrial zone consisted of 10 liverwort, 21 moss, and 34 lichen species. The preliminary data for the arboreal zone, in study plot 2, consisted of one liverwort, seven moss, and 12 lichen species. The terrestrial zone supported one liverwort, 17 moss, and 13 lichen species. Future efforts will include finishing collecting and identifying specimens from study plot 3. This research was supported by an Undergraduate Research Fellowship and the Pryor Fund.

Project Dissemination:

Dale, J.R. & A.C. Risk. (2019, April). Arboreal and Terrestrial Lichen and Bryophyte Species Richness in the Eagle Lake Watershed, Rowan County, Kentucky, oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Dizney, Brandon

Major:

Biomedical Science

Faculty Mentor:

Janelle Hare

Research/Project Title:

The Effect of HTH Mutants on the DNA Binding and Self-Cleavage Capabilities of UmuDAb in Acinetobacter Baumannii

Project Abstract/Summary:

Acinetobacter strains are opportunistic pathogens that can acquire antibiotic resistance. The research project was aimed at creating two distinct mutations to construct UmuDAb helix-turn-helix mutants. The cells will be used to analyze the effect of this mutation on the protein UmuDAb and its ability to bind DNA. The protein will specifically be monitored in its ability to repress both target gene expression and DNA damage-induced mutagenesis in the absence of DNA damage. We designed the materials needed for making the mutations and used PCR to make the mutations in the recombinant DNA molecule. These will be tested through DNA sequencing to confirm whether the mutations have been constructed, and the mutations will then be transferred into the chromosome of the target *Acinetobacter* cells.

We also worked to construct a model of how the UmuDAb helix-turn-helix protein might interact with the three-dimensional double helix of DNA, taking into account the known UmuDAb binding site in DNA. Our investigation showed that the presence of the 5 base pair extra central motif in this binding site, which is not present in typical SOS repressor binding sites, makes the standard 2-protein dimer model untenable. This provides a basis for postulating testable models of how the UmuDAb protein might work together with another protein, or in another, non-standard configuration, to achieve the gene repression observed by ourselves and other labs.

Project Dissemination:

Mr. Dizney worked for approximately 1.5 months, so did not have the time to present any of his work.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Ehr, Anna Grace

Major:

Biomedical Science

Faculty Mentor:

Geoffrey Gearner

Research/Project Title:

Isolation and Characterization of Mycobacteriophages

Project Abstract/Summary:

The purpose of this project is to isolate and characterize mycobacteriophages from local soil samples. The work involves developing a skill set required to work safely in a BSL 2 microbiology laboratory, including aseptic technique, media and reagent preparation, bacteria and phage cultivation, and dilution methods. Once mycobacteriophages have been in isolation, growth characteristics will be evaluated, morphology will be assessed by transmission electron microscopy, DNA will be isolated and sequenced, and phage genomes will be analyzed using bioinformatics tools. This is an example of discovery-based science, which is well-suited for first year students enrolled in STEM programs. To date, Anna Grace has been trained to properly and safely work in a BSL-2 facility, has prepared a variety of reagents and media, and has successfully cultivated mycobacteria, and infect those cells with known phages. The work will continue in AY 2019-2020 as she makes progress towards the rest of the objectives.

Project Dissemination:

The results of the project will be presented at the annual Celebration of Student Scholarship event, the Kentucky Academy of Sciences annual meeting, and genome data will be published in GenBank.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Fulkerson, Jessica

Major:

Biology

Faculty Mentor:

Kurt Gibbs

Research/Project Title:

Calbindin as a Marker for Regenerating Hindbrain Neurons in Xenopus Laevis

Project Abstract/Summary:

Xenopus laevis tadpoles are able to regenerate their spinal cord after injury and recover locomotor function whereas in mammals, nearly all sensory and motor function is lost below the level of spinal cord injury (SCI), resulting in paralysis. However, tadpoles lose this ability with progressive development, which is controlled by thyroid hormone (TH). Neurons located in the hindbrain reticular formation have been shown to robustly regenerate after spinal cord injury. Interestingly, these neurons are one of few neuronal population that express the calcium binding protein calbindin. We will quantify the expression of calbindin during regeneration permissive and inhibitory time points and inhibit its expression with cyclosporinA to determine if calbindin levels promote regeneration after spinal cord injury.

Our project showed the expression of calbindin in the hindbrain of tadpoles and juvenile frogs was not limited to regenerating neurons. However, using additional neurotransmitter markers, we were able to show a population of regenerating neurons that reliably express this marker in development and regeneration, giving us a benchmark for developing a technique to isolate hindbrain tissue for Next-Gen sequencing that generates a greater signal to noise ratio than hindbrain homogenates. A grant was submitted for the sequencing based on this work.

Project Dissemination:

2019 Morehead State University Celebration of Student Scholarship, poster presentation.

Awards and/or Honors:

Jessica received a merit award for her poster at Morehead State University's Celebration of Student Scholarship.

Post-Graduation Plans (Seniors only):

N/A

Gibson, Danielle

Major:

Biomedical Science

Faculty Mentor:

Michael Fultz

Research/Project Title:

Holistic Review of Developing a Cell Culture System to Investigate the Effects of Microgravity on Cytoskeletal Remodeling in Smooth Muscle

Project Abstract/Summary:

N/A

Project Dissemination:

D. Gibson, C Arnold, Kaylee M. Whitenack and Michael E. Fultz. *Redesign of a Cell Culture System to Investigate the Effects of Microgravity on Cytoskeletal Remodeling in Smooth Muscle*, Poster presentation, Posters at the Capitol. Frankfort, KY, February 8th 2018.

Kaylee M. Whitenack, Callie Arnold, Danielle Gibson, and Michael E. Fultz. *Development of a Cell Culture System to Examine the Acclimation, Contraction, and Cytoskeletal Remodeling of A7r5 Smooth Muscle Cells to Microgravity*. Poster presentation, Experimental Biology, San Diego, CA, April 21-25, 2018.

Danielle Gibson and Michael E. Fultz. *Holistic Review of Developing a Cell Culture System to Investigate the Effects of Microgravity on Cytoskeletal Remodeling in Smooth Muscle,* Oral presentation, Celebration of Student Scholarship. Morehead, KY. April 25, 2018.

Callie M. Arnold, *Kaylee M. Whitenack, Danielle N. Gibson, and Michael E. Fultz. *Redesign of a Cell Culture System to Investigate the Effects of Microgravity on Cytoskeletal Remodeling in Smooth Muscle,* Poster presentation, Celebration of Student Scholarship. Morehead, KY. April 25, 2018.

D. Gibson, M.W. Casto, and M.E. Fultz. *Development of a Cell Culture System for the Investigation of the Effects of Microgravity on Cytoskeletal Remodeling and Contraction of A7r5 Smooth Muscle Cells*, Poster presentation, Posters at the Capitol. Frankfort, KY, March 2, 2017.

Danielle Gibson, Mark William Casto, and Michael E. Fultz. *Development of a Cell Culture System for the Investigation of the Effects of Microgravity on Cytoskeletal Remodeling and Contraction of A7r5 Smooth Muscle Cells*, Poster presentation, 102st Annual Meeting of the Kentucky Academy of Science. University of Louisville, Louisville, KY. November 4, 2016.

Kaylee M. Whitenack, Callie Arnold, Danielle Gibson, and Michael E. Fultz. *Development of a Cell Culture System to Examine the Acclimation, Contraction, and Cytoskeletal Remodeling of A7r5 Smooth Muscle Cells to Microgravity*, The FASEB Journal. Volume 32, Issue 1 supplement. April 2 2018.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Accepted into the Wright State University Boonshoft School of Medicine as an MD-PhD degree candidate.

Hargett, Kelsey

Major:

Biology

Faculty Mentor:

Allen Risk

Research/Project Title:

Inventory of the Bryophytes in the Eagle Lake Watershed, Rowan County, KY

Project Abstract/Summary:

Bryophytes are non-vascular plants composed of mosses, liverworts, and hornworts. They can act as bioindicators of environmental quality, contribute to erosion control, provide a nesting substrate for birds, and create habitat for small animals. Bryophytes are a very understudied group when compared to vascular plants, especially in Kentucky. The objective of this study was to inventory the bryophytes occurring in the Eagle Lake watershed in Rowan County, Kentucky. Four recent field trips to the study area yielded 73 specimens. By consulting the Consortium of North American Bryophyte Herbaria website along with recently collected specimens, a total of 29 bryophyte species (five liverworts, 24 mosses) have been documented thus far. Hornworts have yet to be collected in the Eagle Lake watershed. One moss documented was *Fissidens hyalinus,* which is an uncommonly collected species. Future work will include additional field trips to unexplored areas of the Eagle Lake watershed and further collection of specimens. This research was supported by an Undergraduate Research Fellowship from Morehead State University.

Project Dissemination:

Hargett, K. & A.C. Risk, 2019. Inventory of the Bryophytes in the Eagle Lake Watershed, Rowan County, Kentucky. Celebration of Student Scholarship, Morehead State University, Morehead, KY. 2019, April.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Jones, Abby

Major:

Biomedical Science

Faculty Mentor:

Kurt Gibbs

Research/Project Title:

Quantifying the Developmental Expression of Dio3 in the Hindbrain of Xenopus Laevis

Project Abstract/Summary:

Xenopus laevis tadpoles are able to regenerate their spinal cord after injury and recovery locomotor function whereas in mammals, nearly all sensory and motor function is lost below the level of spinal cord injury (SCI), resulting in paralysis. However, tadpoles lose this ability with progressive development, which is controlled by thyroid hormone (TH). TH is released by the thyroid gland and is converted to its biologically active form by the deiodinase enzymes. This also degraded by type III deiodinase Dio3. We hypothesize that specific neurons may be able to regenerate because they maintain larval gene expression programs by deactivating TH through elevated Dio3. We will quantify the developmental expression of Dio3 using qRT-PCR and identify the cell in the hindbrain expressing Dio3 using in situ hybridization. We hope this work will contribute to the understanding of the regenerative ability of Xenopus laevis.

We characterized the expression if DIO1, Dio2, and DIO3 mRNA expression in the hindbrain of tadpoles and juvenile frogs. In addition, we also performed in situ hybridization for DIO3 to identify the cells in the hindbrain that express DIO3 at these developmental timepoints. We did not find an increased expression mRNA level of DIO3 in the hindbrain that we hypothesized but these enzymes may be post-transcriptionally regulated to alter the amount of protein. We will next investigate this possibility.

Project Dissemination:

2019 Celebration of Student Scholarship, Poster presentation.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Attending University of Louisville School of Medicine, beginning August 2019.

Lacey, Cassidy

Major:

Biology

Faculty Mentor:

Kurt Gibbs

Research/Project Title:

Quantification of microRNAs after Spinal Cord Injury in Xenopus Leavis

Project Abstract/Summary:

Xenopus laevis tadpoles are able to regenerate their spinal cord after injury and recover locomotor function whereas in mammals, nearly all sensory and motor function is lost below the level of spinal cord injury (SCI), resulting in paralysis. We have used RNA-SEQ to identify dozens of miRNAs whose expression changes after SCI in both the regeneration permissive and inhibitory conditions. Cassidy will help quantify and validate several of these miRNAs using in situ hybridization.

Cassidy's portion of this project has run into several technical problems, none of which were Cassidy's fault. Because she did not generate enough data in time for Morehead State University's Celebration of Student Scholarship, she was unable to present a poster. We have worked through these obstacles and will present a poster at next year's CSS.

Project Dissemination:
N/A
Awards and/or Honors:
N/A
Post-Graduation Plans (Seniors only):
N/A

Little, Sarah R.

Major:
Biomedical Science Area/Mathematics
Faculty Mentor:
Brandon VanNess
Research/Project Title:
Investigating the Synthesis of the Novel Anti-Cancer Natural Product, LMA-P2
Project Abstract/Summary:
The overall objective of this project is to expose undergraduate researchers to the techniques and strategies of organic synthesis while progressing towards the ultimate synthesis of the natural product, LMA-P2. This project is broken down into three phases of synthesis that focus on three of the key reactions necessary to complete the overall synthesis, the MacMillan cross-aldol reaction, the Takai olefination reaction, and Nozaki–Hiyama–Kishi nickel(II) catalyzed coupling reaction. The role of the students will be to carry out the synthesis of each phase to produce allylic alcohol 2. This project allows undergraduate researchers to gain valuable experience in chemical transformations, purification, and characterization that will prepare them for future careers in synthetic research as well as establishing a foundation for further investigating the synthesis of LMA-P2. Financial support for this project was made possible by a Special Research Program grant award from the Kentucky Academy of Sciences, #9037591.
Project Dissemination:
Poster presentations:
Little, S. & VanNess, B.G. (2018, November). *Investigating the Synthesis of LMA-P2*. Poster presentation, 104th Annual Meeting of the Kentucky Academy of Sciences, Bowling Green, KY.
Little, S., Bradley, S., & VanNess, B.G. (2019, April). *Investigating the Synthesis of LMA-P2.* Poster presentation, 257th National Meeting of the American Chemical Society, Orlando, FL.
Little, S., Bradley, S., & VanNess, B.G. (2019, April). *Investigating the Synthesis of LMA-P2.* Poster presentation, 14th Annual Celebration of Student Scholarship, Morehead, KY.
Awards and/or Honors:
Certificate of Merit, Poster presentation, 2019 Celebration of Student Scholarship.
Post-Graduation Plans (Seniors only):
Pursue a Ph.D. in Mathematics

Rothermund, Kay M.

Major:
Biology
Faculty Mentor:
Allen Risk
Research/Project Title:
Analysis of Frequency Distributions of *Parmotrema* (ruffle lichens) and *Quercus* (oaks) to Identify Species of Conservation Concern in Kentucky

Project Abstract/Summary:

*Parmotrema (*ruffle lichens) and *Quercus* (oaks) were studied for number of species and specimens collected in Kentucky and three other states in order to compare abundance patterns of the species in the two genera with the objective of identifying species for conservation consideration in Kentucky. Number of specimens collected was determined by using SERNEC and CNALH, online databases for vascular plants and lichens, respectively. Morehead State University's herbarium (MDKY) was also searched for additional specimens not documented online. Both genera are species rich and commonly found in Kentucky. *Parmotrema* has 26 species found in Kentucky while *Quercus* has 21. Frequency distributions by species for each genus were created. The *Quercus* frequency distributions had a negative exponential trend, suggesting there are significant differences in the proportion of rare species for each genus. Seven species (26.9%) for *Parmotrema* and three species (14.3%) for *Quercus* were identified for conservation consideration. A possible explanation for this significant difference in percentage is that vascular plants, in general, are collected more often than lichens. If *Parmotrema* was collected more, the frequency distribution might become more linear like that of *Quercus.* Additional possible explanations are that there are differences in the speciation history of the genera or that *Parmotrema* species have narrower niche requirements than *Quercus* species. This research was supported by a Morehead State University Undergraduate Research Fellowship.

Project Dissemination:

Rothermund, Kay M. and Risk, Allen C. (2019, April). *Analysis of Frequency Distributions of Armotrema (ruffle lichens) and Quercus (oaks) to Identify Species of Conservation Concern in Kentucky,* Poster presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Shumate, Bryana

Major:

Biology

Faculty Mentor:

Sean O'Keefe

Research/Project Title:

Beetle Diversity: A Comparison of the Biodiversity of Ecotone vs. Woods Surrounding Morehead State's Eagle Lake

Project Abstract/Summary:

Biodiversity is an important indicator of health within an ecosystem. Coleoptera (beetles), which comprise twenty percent of known, described species, inhabit a wide variety of habitat types making them excellent study organisms to address biodiversity-related questions. To study this phenomenon, we compared the biodiversity of Coleoptera within Morehead State University's Eagle Lake. We collected leaf-litter samples from wooded habitat and its associated ecotone between the wooded area and more disturbed, open field surrounding Eagle Lake to assess whether there were any differences in biodiversity richness and abundance. Through our data we discovered that the leaf litter from the wooded regions of Eagle Lake featured many morphologically diverse organisms, and the inhabitants of the forest floor approaching the ecotone can change dramatically over a distance of only a few meters. When data were compared to levels of other indicator species of mites and ants, we were able to gain an overall understanding of the biodiversity of the area and its sustainability for local wildlife.

Project Dissemination:

Presented as a poster at the 2019 Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Attend medical school.

Smith, Brice L.

Major:

Biomedical Sciences

Faculty Mentor:

Melissa Mefford

Research/Project Title:

Evolving More Active Telelomerase Enzyme in *Saccharomyces Cerevisiae*

Project Abstract/Summary:

Telomeres are repetitive DNA sequences found at the ends of linear chromosomes in eukaryotic organisms ranging from yeast to humans. Though telomeres act to protect the end, they cannot be fully copied by the DNA replication machinery. This “end replication problem” is overcome by a telomere-lengthening enzyme called telomerase. Telomerase is minimally composed of a non-coding telomerase RNA and a reverse transcriptase protein. Without telomerase, telomeres shorten over time, eventually causing cells to senesce and contributing to cellular aging. On the other hand, more than 85% of human cancers overexpress telomerase to support the uncontrolled cell division characteristic of this disease. In order to better understand how the telomerase enzyme works, we are screening a library of telomerase RNA mutations for gain-of-function alleles that increase the activity of telomerase. This screen utilizes a counter-selectable marker located in the telomeric region that exhibits the telomere position effect (TPE). With TPE, longer telomeres increase silencing of genes near telomeres allowing us to select yeast that have more active telomerase. Our results will shed light on how the structure of telomerase RNA contributes to enzyme function. Ultimately, being able to create more active telomerase that lengthens telomeres could be used to slow aging or treat diseases of pre-mature aging.

Project Dissemination:

Whaley, A., Smith, B. and Mefford, M. (April 2019). *Evolving a More Active Telomerase Enzyme in Saccharomyces Cerevisiae.* Poster presentation, Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Spradlin, Austin

Major:

Veterinary Science

Faculty Mentor:

David Eisenhour

Research/Project Title:

Changes in the Fish Communities of Triplett Creek Following Restoration of a Channelized Reach

Project Abstract/Summary:

In the early 1970s, Triplett Creek in Morehead, Kentucky, was straightened, deepened, and widened, resulting in a rather homogenous aquatic habitat, varying little in depth, flow, and substrate. In summer of 2018, a section of the stream was “restored” in order to alleviate the bank instability and flooding problems created by the 1970s channelization, restore the health of its aquatic community, and improve recreational opportunities, including fishing. Our goal was to examine changes in the fish population resulting from the extensive modifications to the channel and substrate during the restoration. We studied the fish populations at four sites (two sites in the restored area and two unaltered reference sites) in June and October of 2018, just before and just after, respectively, the restoration work occurred. Fishes were qualitatively sampled using backpack electrofishing and seining. Encountered fishes were identified and counted, which allowed us to assess the fish community health using the Kentucky Index of Biotic Integrity (KIBI). In June 2018, prior to restoration work, the four sites had KIBI scores between 59 and 70, all of which rated as “good”. However, the two sites in the to-be restored area had a higher proportion of nonnative fishes, and fewer darter species compared to the reference sites, indicative of a more impaired fish community. In October 2018, one restored site and one reference site scored as good (KIBI = 59-70). One restored site and one reference site scored as fair (KIBI = 39-58). The drop in KIBI scores in all four sites probably reflects high water and poor collecting conditions during the October sampling. The total number of species in the restored sites decreased after restoration from 25 to 21 in the upper site and from 24 to 18 in the lower site, while the number of total species remained close to the same in the reference sites. In addition, the number of darter species dropped in the upper restored site (from 6 to 2), while remaining about the same in the other sites. This is likely due to the extensive habitat modification during the restoration efforts, which was most pronounced in the upper restored site. In the future we expect the fish communities of the restored section to improve, as riparian vegetation becomes established, the substrate stabilizes, and invertebrate communities (i.e., food for fishes) colonize the new habitat. We plan to continue monitoring the fish fauna changes of the restored areas of Triplett Creek.

Project Dissemination:

2019. Spradlin, A., J. Eisenhour, and D.J. Eisenhour. *Changes in the Fish Community of Triplett Creek Following Restoration of a Channelized Reach*. Celebration of Student Scholarship, Morehead, KY, April.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A – Returning to do senior year at MSU.

Stegemann, Hannah

Major:

Biology

Faculty Mentor:

Allen Risk

Research/Project Title:

Dust Lichen (*Lepraria*) Species Identification using Thin-layer Chromatography

Project Abstract/Summary:

Lichens are organisms composed of algae and fungi. There are three main categories of lichen growth forms, crustose (firmly attached to the substrate, difficult to remove), fruticose (branching), and foliose (leaf-like). A category of crustose lichens, called the dust lichens, are the focus of the present study. A dust lichen looks very powdery and the thallus is composed of soredia-like granules. Dust lichens are very common and are found on trees, rocks, and soil all over the world. Species of dust lichens are difficult to distinguish on the basis of morphology and simple chemical tests such as KOH (potassium hydroxide), and C (bleach), thus an alternative method to identify them is needed. Thin-layer chromatography, TLC, is a chemical procedure that uses a solvent system to separate substances based on their chemical properties. It has been used by various researchers for a variety of separation procedures. The purpose of the present research is to correctly identify dust lichens found in the local eastern Kentucky region. Thus far, after four TLC runs with solvent C (toluene and glacial acetic acid), one species, *Lepraria finkii,* has been positively identified based on the presence of atranorin, zeorin, and stictic acid. *Parmotrema hypotropum* and an authoritatively identified specimen of *Lepraria finkii* were used as standards for confirmation.

Project Dissemination:

2019 Morehead State University Celebration of Student Scholarship, April 24, 2019, Oral Presentation.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Tran, Minh Ngoc

Major:

Biomedical Science

Faculty Mentor:

Geoffrey Gearner

Research/Project Title:

The Detection of Antibiotic Resistant Bacteria in the Triplett Creek Watershed

Project Abstract/Summary:

The purpose of this study was to identify antibiotic resistant bacteria in the Triplett Creek Watershed (TCW) in Rowan County, Kentucky, as well as the identification of genes that encode antibiotic resistance factors. She is engaged in a longitudinal study that routinely evaluates 12 sampling sites in the watershed for the presence of nine antibiotic resistant genes: *TetW*, *TetO*, *SulI*, *SulII*, *ereA*, *msrA/B*, bla_{TEM}, bla_{SHV}, and bla_{CMY}, as well as a marker for the bacterium *Escherichia coli*, *uidA*, and a marker for the 16S rRNA gene of bacteria. The work involves DNA extraction, Nanodrop spectroscopy, polymerase chain reaction, and agarose gel electrophoresis to test for the presence of these genes. For the Fall 2018 sampling, the students detected *msrA/B* in 11/12 sites, *uidA* in 10/12 sites, *SulII* in 7/12 sites, bla_{TEM} in 6/12, *ereA* in 5/12 sites, *SulI* in 5/12 sites, bla_{SHV} in 3/12 sites, and bla_{CYM} in 2/12 sites. There were no PCR products for antibiotic-resistant genes *tetO*, *tetW*, and bla_{TEM} detected.

Project Dissemination:

Tran, M., Blanton, S., Gearner, G. (2019). *The Detection of Antibiotic Resistant Bacteria in the Triplett Creek Watershed*, Poster presentation, Celebration of Student Scholarship, Morehead State University, Morehead, KY, 24, April 2019.

Awards and/or Honors:

Minh Tran received an Exceptional Merit Award for the poster.

Post-Graduation Plans (Seniors only):

N/A

Whaley, Abigail

Major:

Biomedical Science

Faculty Mentor:

Melissa Mefford

Research/Project Title:

Evolving More Active Telomerase Enzyme in *Saccharomyces Cerevisiae*

Project Abstract/Summary:

Telomeres are repetitive DNA sequences found at the ends of linear chromosomes in eukaryotic organisms ranging from yeast to humans. Though telomeres act to protect the end, they cannot be fully copied by the DNA replication machinery. This “end replication problem” is overcome by a telomere-lengthening enzyme called telomerase. Telomerase is minimally composed of a non-coding telomerase RNA and a reverse transcriptase protein. Without telomerase, telomeres shorten over time, eventually causing cells to senesce and contributing to cellular aging. On the other hand, more than 85% of human cancers overexpress telomerase to support the uncontrolled cell division characteristic of this disease. In order to better understand how the telomerase enzyme works, we are screening a library of telomerase RNA mutations for gain-of-function alleles that increase the activity of telomerase. This screen utilizes a counter-selectable marker located in the telomeric region that exhibits the telomere position effect (TPE). With TPE, longer telomeres increase silencing of genes near telomeres allowing us to select yeast that have more active telomerase. Our results will shed light on how the structure of telomerase RNA contributes to enzyme function. Ultimately, being able to create more active telomerase that lengthens telomeres could be used to slow aging or treat diseases of pre-mature aging.

Project Dissemination:

Whaley, A., Smith, B. and Mefford, M. (April 2019). *Evolving a More Active Telomerase Enzyme in Saccharomyces Cerevisiae.* Poster presentation, Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

DEPARTMENT OF EARTH AND SPACE SCIENCE

Killen, Ashton

Major:

Earth Systems Science

Faculty Mentor:

Jen O'Keefe

Research/Project Title:

Paleoecology of the McKinney Roughs Coal and Associated Sediments

Project Abstract/Summary:

Onshore and nearshore sedimentary rock from the Hooper Formation, lower Wilcox Group, exposed in McKinney Roughs Nature Park are among the best exposures of the Hooper Formation, which is very poorly known. In this area, sandy tidal heterolithics underly a single subbituminous coal seam with two splits. Here we present analysis of the original sampling of exposures in the park, collected in 2017. The tidal heterolithics contain an abundant and diverse palynoflora, dominated by tree pollen, including members of the chestnut family, walnut family, and palms. The coals contain an abundant, but much less diverse flora dominated by freshwater algae and dinoflagellate cysts but also contain willow, sedge, dogwood, and bald cypress pollen. This is consistent with peat development in ponded-freshwater coastal wetlands, similar to those present near Brazos Bend State Park today.

Project Dissemination:

Killen, Ashton A., Cowey, N., Denison, C.N., Demchuk, T.D., O'Keefe, J.M.K.**,** 2018. *Palynology of the Hooper Formation (Paleocene), Wilcox Group, Bastrop County, Texas: A Preliminary Study*, Poster presentation, 2018 Annual Meeting of the Geological Society of America Program with Abstracts. https://gsa.confex.com/gsa/2018AM/webprogram/Paper321189.html (poster)

Killen, Ashton A., Cowey, N., Denison, C.N., Demchuk, T.D., O'Keefe, J.M.K.**,** 2019. *An Overview of Peat Forming Ecosystems Preserved in Hooper Formation Rocks at McKinney Roughs Nature Park.* Oral presentation, 2019 Celebration of Student Scholarship.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Mikula, Rebecca

Major:

Astrophysics

Faculty Mentor:

Dirk Grupe

Research/Project Title:

Swift Data Analysis and Monitoring of the Changing Look AGN NGC 1566

Project Abstract/Summary:

The Active Galactic Nucleus NGC 1566 was discovered by INTEGRAL as a flaring hard X-ray AGN in June 2018, which triggered several follow-up observations. In addition also an optical flare was discovered by the ASSAS_SN supernova search. In collaboration with the ASSAS-SN group we started a monitoring campaign with Swift and several triggers with XMM. It turned out that this AGN is one of a rare type where an AGN changes its type from a Seyfert2 to a Seyfert 1.5 galaxy. Becca has been the lead on the Swift monitoring campaign since October 2018 and has been a Co-author on a paper covering one of the XMM observations we had in July 2018 (Parker et al., 2019, MNRAS 483,88). Our goal is to continue with the project next year, because there is a series of papers coming out on this source which are currently in preparation.

Project Dissemination:

Mikula et al., Poster presentation at the Swift meeting in October 2018 in Clemson, SC.
Talk by Becca Mikula at the Kentucky Academy of Science meeting in November 2018 in Bowling Green.
Talk by Becca Mikula at the Kentucky Area Astronomical Society meeting 2019 in Morehead in April.
Talk by Becca Mikula at the Celebration of Student Scholarship at Morehead State in April.

Awards and/or Honors:

Becca won first place for the oral presentations in Physics and Astronomy at the Kentucky Academy of Science meeting in Bowling Green.
Becca also won a Merit at this years Celebration of Student Scholarship.

Post-Graduation Plans (Seniors only):

N/A

Nichols, Mitchell

Major:

Space Science

Faculty Mentor:

Thomas Pannuti

Research/Project Title:

Chandra and XMM-Newton Observations of the Discrete X-Ray Source Population of the Nearby Spiral Galaxies NGC 55, NGC 247 and NGC 7793

Project Abstract/Summary:

With its unsurpassed high angular resolution and moderate flux sensitivity, the Chandra X-ray Observatory is the premier observatory to conduct observations of discrete X-ray sources in nearby galaxies. The types of sources detected by such observations include supernova remnants (SNRs), X-ray binaries (XRBs), central X-ray sources (which may correspond to supermassive black holes) and background galaxies. In the past, despite their proximity (both galaxies lie at distances of less than 3 Mpc) the galaxies NGC 55, NGC 247 and NGC 7793 have not been the subjects of particularly detailed analyses of their resident X-ray and radio source populations. This situation may be attributed to several factors, such as comparatively modest rates of star formation which would parent smaller populations of SNRs and XRBs. For this reason, the majority of X-ray data collected in pointed observations made of these galaxies remain poorly explored and meaningful comparisons with discrete sources found at other wavelengths (namely radio) in pointed observations made of these galaxies have yet to be made. Starting in the Spring 2017 Semester, Mitchell and Dr. Pannuti have analyzed archival observations made of these three galaxies with the Chandra X-ray Observatory. We concentrated on the datasets produced by the observations of NGC 7793: the total effective observing time of these observations was 190 kiloseconds. Using tools in the CIAO software package (the standard software package for analyzing Chandra data), Mitchell ran standard source detection algorithms (such as the wavelet-based tool wavedetect) to identify discrete X-ray sources in the four individual observations as well as the merged observation. Processing of the individual observations facilitated a search for time-variability in the X-ray emission from the detected discrete sources while the analysis of the merged observation allowed a search for discrete X-ray sources with a maximum of flux sensitivity. As a result of this work, Mitchell increased the number of known discrete X-ray sources seen toward NGC 7793 by more than a factor of three (from 22 to over 70) while the limiting luminosity of the known discrete X-ray sources was lowered to approximately 10^{36} ergs per second. Mitchell also identified two discrete sources that showed clear evidence of time-variability. Finally, Mitchell discovered that the peculiar extension of X-ray sources located beyond the eastern edge of the optical rim of the galaxy may be physically associated with an extension of cold hydrogen gas associated with NGC 7793. The physical connection between these X-ray sources and this extension of cold hydrogen remains unknown. Mitchell gave oral presentations on his work at the 2019 meeting of the American Astronomical Society Kentucky Area and at the 2019 Celebration of Student Scholarship at Morehead State University. His research will form a basis for a paper that will be written with Professor Pannuti and submitted for publication to the Astrophysical Journal, a major refereed journal that publishes papers in astronomy and astrophysics.

Project Dissemination:

Publications:

Pannuti, T. G., Nichols, M.E., et al. *A Deep Chandra X-ray Observation of the Nearby Spiral Galaxy NGC 7793*, 2019, to be submitted to the Astrophysical Journal.

Oral Presentations:

Nichols, M.E. and Pannuti, T. G., *A Deep Chandra X-ray Observation of the Nearby Spiral Galaxy NGC 7793,"* 2019, American Astronomical Society Kentucky Area Meeting, Morehead State University, Morehead, KY, 13 April 2019.

Nichols, M. E. and Pannuti, T. G., *A Deep Chandra X-ray Observation of the Nearby Spiral Galaxy NGC 7793,"* 2019, 14th Annual Celebration of Student Scholarship, Morehead State University, Morehead, KY, 24 April 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Mitchell is planning on taking a year off to ensure that he is financially prepared for graduate school as well as to study for the Physics Graduate Record Examination (GRE) and to explore graduate school options. He is planning to enroll in graduate school in physics during the Fall 2020 semester to pursue a PhD in physics or astronomy.

Pennington, Logan

Major:

Space Science

Faculty Mentor:

Benjamin Malphrus

Research/Project Title:

Small Satellite Mission Operations at Morehead State University: Asteria Mission

Project Abstract/Summary:

ASTERIA (Arcsecond Space Telescope Enabling Research in Astrophysics) was deployed from the ISS on November 20, 2017. It's mission is to achieve arcsecond-level line-of-sight pointing error and highly stable focal plane temperature control. The developers of this spacecraft are part of JPL's Phaeton Program. Morehead State University's Space Science Center was contracted to provide spacecraft tracking, telemetry, and control services to the Mission Operations team at JPL. The Space Science center' ground operations team uses advanced technology consisting of highly sensitive RF front ends, fiber optics, SDR software, an Amergint transceiver, and MSU's own 21-Meter Space Tracking Antenna to preform theses services. The team has performed over 300 passes since spacecraft deployment. ASTERIA's 90-day prime mission was successful. The spacecraft continues to operate nominally and MSU has now entered an extended contract. In this work, the URF will develop an overview of the ASTERIA mission, the mission operation processes, and the ground station Architecture, and train in mission operations by providing on-console support for the NASA ASTERIA mission.

Project Dissemination:

N/A

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Rickman, Nathan

Major:

Space Science

Faculty Mentor:

Benjamin Malphrus

Research/Project Title:

Small Satellite Mission Operations at Morehead State University: Asteria Mission

Project Abstract/Summary:

ASTERIA (Arcsecond Space Telescope Enabling Research in Astrophysics) was deployed from the ISS on November 20, 2017. It's mission is to achieve arcsecond-level line-of-sight pointing error and highly stable focal plane temperature control. The developers of this spacecraft are part of JPL's Phaeton Program. Morehead State University's Space Science Center was contracted to provide spacecraft tracking, telemetry, and control services to the Mission Operations team at JPL. The Space Science center' ground operations team uses advanced technology consisting of highly sensitive RF front ends, fiber optics, SDR software, an Amergint transceiver, and MSU's own 21-Meter Space Tracking Antenna to preform theses services. The team has performed over 300 passes since spacecraft deployment. ASTERIA's 90-day prime mission was successful. The spacecraft continues to operate nominally and MSU has now entered an extended contract. In this work, the URF will develop an overview of the ASTERIA mission, the mission operation processes, and the ground station Architecture, and train in mission operations by providing on-console support for the NASA ASTERIA mission.

Project Dissemination:

N/A

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Roberts, Alexander

Major:

Mathematics

Faculty Mentor:

Benjamin Malphrus

Research/Project Title:

Lunar Ice Cube: Development of a Numerical Model for Attitude Control

Project Abstract/Summary:

The Lunar IceCube project is a 6U CubeSat designed to prospect the moon for any sign of water in solid, liquid, and vapor forms along with any other volatiles from a low-perigee, highly inclined lunar orbit and has been selected by NASA to fly on Exploration Mission-1. For Lunar IceCube to complete its mission it will need a complex attitude control model developed specifically for the science orbit. The 7-hour science orbit requires on board instruments to be oriented lunar nadir during periapsis, the spacecraft on board communications system to oriented towards the Earth vector for communications and ranging, the solar array oriented towards the Sun vector to charge the spacecraft and the spacecrafts minor axis must be oriented perpendicular to the plane of the ecliptic for thermal management. For this to work Lunar IceCubes attitude control must have some autonomy, so the project will need a well-defined attitude model. The purpose of this study is to create an attitude model of the scientific orbit of the Luncar IceCube project. Simulation and numerical analysis tools will be used along with mathematical conventions and notations to develop the model.

Project Dissemination:

N/A

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Apply for master's program in Space Systems Engineering at Morehead State University.

Schabert, Jacob

Major:

Space Science

Faculty Mentor:

Benjamin Malphrus

Research/Project Title:

Implementation of the SPICE Observation Geometry System on the Lunar IceCube Mission

Project Abstract/Summary:

In remote-sensing planetary science missions, understanding the observational geometry of the mission is exceptionally important in achieving the science goals. Without this information, the scientists would have a set of data with no feasible method of correlating it with a physical point for future reanalysis or practical applications. To meet this requirement, NASA JPL's Navigational and Ancillary Information Facility (NAIF) has developed and supported a data system and set of tools called SPICE. To meet its science requirements, SPICE is being used by Lunar IceCube as its basis for ancillary information to provide context to the Lunar IceCube science data. Lunar IceCube is a CubeSat developed by Morehead State University in partnership with NASA Goddard and JPL. It is one of the thirteen CubeSats selected to launch as a secondary payload on Exploration Mission 1 (EM-1) the first launch of the Space Launch System. This research was funded in part by a NASA Space Grant and the Hal Rogers Undergraduate Fellowship for Space Science.

Project Dissemination:

Schabert, Jacob T. (2019, April). *Implementation of the SPICE Observation Geometry System on the Lunar IceCube Mission,* Oral presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Schabert, Jacob T. (2018, November). *Implementation of the SPICE Observation Geometry System on the Lunar IceCube Mission*, Oral presentation, The Kentucky Academy of Science 104th Annual Meeting, Bowling Green, Kentucky, November, 2018.

Awards and/or Honors:

Certificate of Merit, Undergraduate Oral Presentation Competition, Celebrtation of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):

N/A

Stephenson, Frances

Major:

Geology

Faculty Mentor:

Jen O'Keefe

Research/Project Title:

1 – A Changing World: Ecological Transitions in The Paleocene – Eocene Manawianui Drive Section, Bastrop County, TX

2 – Palynology of Pleistocene and Holocene Sediment Core BBL 3, Big Bone Lick, Kentucky

Project Abstract/Summary:

1) Wilcox and Claiborne Group strata from Bastrop County, TX, contain a diverse pollen and spore flora, including many important ecological indicator fungi and other non-pollen palynomorphs. Of interest is how the non-pollen palynomorph spectrum tracks ecological changes from the base of the channel-fill through the Carrizo. The coals record mangrove swamps (Pseudodelitchia sp., Nigrospora sacchari, and Ascobolus sp.) that give way to hardwood hammocks (Dwibeeja sp., Cortinarius spinosus, and basidiospores), that transition to sawgrass mashes (Acrogenospora gigantica, basidiospores, and desmids). Carrizo deposition is abruptly different, and likely occurred on a shallow shelf offshore from a brackish tidal marsh bordered by a palm savannah (Kamatella sp., Nigrospora sp., and Lacrimasporites sp.). Up section, we see abundant fungi and rotifer lorica.
2) The initial study of eight samples obtained from Big Bone Lick State Historic Site in 2012 produced an abundant and diverse palynofloral record that spans the upper Pleistocene to middle Holocene. Here we present the first palynological study of the BBL 3 core, obtained by the Kentucky Geological Survey in July 2004. 33 new subsamples were obtained, following the original sampling pattern and processed using disaggregation, enzymes, and density separation methods. The residues are charcoal and palynomorph-rich; non-pollen palynomorphs (NNPs) are especially abundant. The plant pollen and spores recovered do not match the documented mesobotany for the site. Tulip poplar (Liriodendron tulipifera), grape (Vitis sp.), and Pinks (Silene sp.) pollen are absent, as are lichen spores. This likely represents preservational bias and flooding of local signals by transported pollen. The NPP is dominated by fungi. These include mutualistic (mycorrhizal), parasitic, and saprophytic taxa, including known dung fungi. Diverse dung fungi point toward the presence of a variety of herbivores and carnivores already known from their bones, but also toward the presence of geese, the bones of which aren't preserved at Big Bone Lick.

Project Dissemination:

Published Abstracts & Oral/Poster Presentations:

Steiner, L.M., Stephenson, F.M., Olmsted, S.S., O'Keefe, J., Andrews Jr., W., 2019. *Palynology of Pleistocene and Holocene Sediment Core BBL 3, Big Bone Lick, Kentucky*. Oral presentation, 2019 Celebration of Student Scholarship Program with Abstracts, p. 24.

Stephenson, F.M., O'Keefe, J., Demchuk, T., Denison, C., 2019. *A Changing World: Ecological Transitions in the Paleocene-Eocene Manawianui Drive Section, Bastrop County, TX*. Oral presentation, 2019 Celebration of Student Scholarship Program with Abstracts, p. 25.

Demchuk, T.D., Denison, C.N., O'Keefe, J., Gardener, Kristina F., Stephenson, Maggie, 2018. *Palynological Characterization of the PETM Hyperthermal Event in Central Texas*. Oral presentation, 2018 Annual Meeting of the Geological Society of America Program with Abstracts. https://gsa.confex.com/gsa/2018AM/webprogram/Paper317903.html.

Olmsted, Sara S., Steiner, Lucille M., Stephenson, Maggie, O'Keefe, J. M.K., Andrews Jr., William. 2018. *Palynology of Pleistocene and Holocene Sediment core BBL 3, Big Bone Lick, Kentucky*. Poster presentation, 2018 Annual Meeting of the Geological Society of America Program with Abstracts. https://gsa.confex.com/gsa/2018AM/webprogram/Paper323790.html.

Stephenson, Maggie, O'Keefe, J.M.K., Demchuk, T.D., Denison, C.N., 2018. *From Palm Savannahs to Hardwood Hammocks and Back: Palynology of the Paleocene-Eocene Manawianui Drive Section, Bastrop County, TX*. Poster presentation, 2018 Annual Meeting of the Geological Society of America Program with Abstracts. https://gsa.confex.com/gsa/2018AM/webprogram/Paper321138.html.

O'Keefe, J.M.K., Nuñez Otaño, N., Stephenson, M., Pound, M., Riding, J. (2018). *Cigars, Vases and Dead Centipedes: Non-pollen Palynomorphs from the Middle to Late Miocene Brassington Formation, UK*. Oral presentation, 10th European Palaeobotany and Palynology Conference. Dublin, Ireland.

Stephenson, F.M., O'Keefe, J.M.K., Demchuk, T.D., Denison, C.N., (2018). F*rom Palm Savannahs to Hardwood Hammocks and Back: Palynology of the Paleocene-Eocene Manawianui Drive Section, Bastrop, TX*. Oral presentation, XVII Simposio Argentino de Paleobotánica y Palinología: Hacia nuevos desafínos. Paraná, Entre Ríos, Argentina.

Awards and/or Honors:

Awarded “Best Student Poster Presentation Award” by the Geobiology and Geomicrobiology Division of the Geological Society of America (GSA) at the 2018 annual meeting of GSA in Indianapolis for the presentation “*From Palm Savannahs to Hardwood Hammocks and Back: Palynology of the Paleocene-Eocene Manawianui Drive Section, Bastrop County, TX*.

Post-Graduation Plans (Seniors only):

N/A

Winters, Katerina

Major:

Space Systems Engineering

Faculty Mentor:

Benjamin Malphrus

Research/Project Title:

Safety Engineering and Assembly, Integration & Testing for the CubeSat NASA Mission Lunar IceCube

Project Abstract/Summary:

The most powerful rocket to date, NASA’s Space Launch System (SLS) EM-1, is set to launch in 2020. Thirteen secondary payloads, in the form of 6U CubeSats, satellites about the size and shape of a shoe box, will be launched on the rocket. One of these secondary payloads is Morehead State University’s Lunar IceCube (L-IC) whose mission is to scan the Moon’s surface to study and track water ice and other volatiles. To be built at the university, L-IC must adhere to NASA standards and requirements to guarantee that L-IC will not harm the SLS or the other payloads during the launch. The Safety Engineering Team, comprised of three undergraduate students, a graduate student and faculty members, is responsible for ensuring adherence to these requirements. Hazard Reports are part of the criteria that must be met to launch on the SLS. In order to complete Hazard Reports, safety verifications must be established, approved, and closed. The closure of verifications is accomplished through adherence to NASA standards, internal and NASA reviews of L-IC’s design, and test results. The Phase I and Phase II Safety Reviews for L-IC at NASA Marshall Space Flight Center have been passed; the Phase III Safety Review, the final safety review, is occurring on May 23rd of this year. To pass the safety reviews and have a successful mission, Assembly, Integration, & Testing (AI&T) is required for all of the primary spacecraft subsystems, including the EPS (Electrical Power System). Comprised of five components from a third party supplier, the EPS distributes power to the other subsystems, keeping them powered and functioning. The components of the EPS are the battery module, EPS module, PDB (Power Distribution Board), DASA (Deployable Articulated Solar Array), and the solar panels. Test plans and procedures are being written for the EPS and its components in order to undergo a variety of tests before satellite integration. L-IC will be assembled and integrated this summer.

Project Dissemination:

Oral Presentation(s):

Winters, Katerina F. (2019, April). *Lunar IceCube: Safety Verification and EPS Subsystem Testing,* presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Winters, Katerina F. (2018, November). *Safety Engineering for a CubeSat: Hazards and Verifications,* The Kentucky Academy of Science 104th Annual Meeting, Bowling Green, KY, November, 2018.

Awards and/or Honors:

Certificate of Merit, Undergraduate Oral Presentation Competition, Celebration of Student Scholarship, April 2019.

Second Place, Undergraduate Oral Presentation Competition, Engineering Section, Kentucky Academy of Science, November, 2018.

Post-Graduation Plans (Seniors only):

N/A

DEPARTMENT OF MATHEMATICS AND PHYSICS

Castle, Jared

Major:
Physics/Mechanical Engineering

Faculty Mentor:
Jennifer Birriel

Research/Project Title:
Cosmic Muon Detection with a DSLR

Project Abstract/Summary:
A 2010 article in Astronomy Education Review a digital single-lens reflex camera was used to detect cosmic muons. We originally hypothesized that the number of cosmic ray hits on a DSLR camera should decrease as the angle that the CMOS chips makes with the horizontal increases. We used a Nikon D7000 camera with a light-tight lens cap attached, and secured it to an incline plane to allow us to change the angle of inclination of the CMOS chip. We collected five, 3-minute exposures at ISO 6400. We performed a visual search of each image for cosmic ray strikes using an image manipulation program. The angles used were: 0, 20, 30, 45, and 90 degrees all with respect to a horizontal plane. We derived an uncertainty equivalent to the square root of the number of counts. Our results show no significant evidence of angular dependence. This seems reasonable since cosmic muons do not follow a purely vertical path and we collected contributions from multiple showers occurring at different locations in the sky. We were able to corroborate previous results indicating that DSLR CMOS chips appear to capture cosmic muons at about half the predicted rate of one per cm^2 per min. In the future, we plan to examine the effects of overhead power lines.

Project Dissemination:
Castle, Jared S. and Professor, Jennifer Birriel. (2019, May). *Cosmic Detection with a DSLR*, Oral presentation, Celebration of Student Scholarship, Morehead, KY, May, 2019.

Castle, Jared S. and Professor, Jennifer Birriel (2019, February). *Cosmic Muon Detection with a DSLR*, the Kentucky Association of Physics Teachers, Louisville, KY, November, 2018.

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
The student is transferring to the University of KY College of Engineering this fall to complete his 2 years in the Physics and Engineering dual degree program. This completes his project.

Caudill, Ethan D.

Major:
Professional Physics/General Math

Faculty Mentor:
Jennifer Birriel

Research/Project Title:
A Simple Solar Limb Darkening Experiment

Project Abstract/Summary:
The brightness of the solar disk is greatest at its center and decreases moving outward to the limb: this is the so-called “limb darkening effect”. Here, we demonstrate how solar limb darkening can be measured using modest equipment. We use a solar projection scope (a modified “Solar Scope”) and a cellphone camera to record data. Using SalsaJ, we examine the limb darkening effect both qualitatively and quantitatively. We explain our methodology and discuss how to use this as a laboratory activity that requires a very low learning curve.

Project Dissemination:
Caudill, Ethan D. and Professor, Jennifer B. Birriel (2018, November). *A Simple Solar Limb Darkening Experiment,* Oral Presentation, Annual Meeting of the Kentucky Association for Physics Teachers, Louisville, KY, November, 2019.

Caudill, Ethan D. and Professor, Jennifer B. Birriel (2019, April). *A Simple Solar Limb Darkening Experiment,* Oral Presentation, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
Accepted with fellowship money into a Ph.D. program in physics at the University of Oklahoma for Fall 2019.

Christian, Casey

Major:

Mathematics/Physics

Faculty Mentor:

Joshua Qualls

Research/Project Title:

Modular Bootstrap Bounds at Finite Central Charge

Project Abstract/Summary:

Conformal field theories (CFTs) describe many physical phenomena, ranging from phase transitions to quantum gravity. By considering unitary 2d CFTs with modular-invariant torus partition functions, we find new universal constraints on the CFT spectrum for finite central charge. In addition to directly constraining consistent CFTs of, for example, low-dimensional condensed matter systems, these bounds on the number of states translate into bounds on black hole entropy in theories of three-dimensional quantum gravity.

Project Dissemination:

Christian, C. (2018) *Modular Bootstrap Bounds at Finite Central Charge*. Presented at the 104th Annual Meeting of the Kentucky Academy of Science, Bowling Green, KY.

Christian, C. (2019) *Modular Bootstrap Bounds at Finite Central Charge*. Presented at the 15th Annual Celebration of Student Scholarship, Morehead State University, Morehead, KY.

Awards and/or Honors:

For the former, the student entered his other (capstone) presentation for judging. He was awarded 2nd place for Physics and Astronomy; after the session, he was told by one of the judges that had he submitted this work for judgment that he would have taken first place.

For the latter, the judges' comments included "Great presentation" and "Good speaking voice. Very scientific." His average score was an 83, with exceptionally high marks in Speaking (13.6), Delivery (12.8), and Critical Thinking/Problem Solving/Research (13.2).

Post-Graduation Plans (Seniors only):

Accepted into summer internship at Lawrence Berkeley National Laboratory; Casey will be investigating whether nitrogen vacancy pairs in diamonds can be used for qubit synthesis by exposing diamonds to high particle fluences from particle accelerators to explore a region of phase space far from equilibrium.

Epperson, Breanna

Major:

Physics

Faculty Mentor:

Kent Price

Research/Project Title:

Increasing Student Understanding of Concepts in PHYS 201

Project Abstract/Summary:

URF and mentor made changes to the discussion forum portion of the online section of PHYS 201. URF evaluated student responses in the forum and collected data showing that the changes resulted in increased engagement of the students and some evidence of improved conceptual understanding. URF also held out-of-class sessions to review concepts with on-campus students. On-campus students state the sessions helped them better understand the concepts.

Project Dissemination:

Celebration of Student Scholarship poster: Increasing Student Engagement in Introductory Online Physics.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Henderson, Eddie

Major:

Physics

Faculty Mentor:

Ignacio Birriel

Research/Project Title:

The Calibration of Nuclear Radiation Detectors

Project Abstract/Summary:

The first phase of this research project involves calibrating GAMMA-SCOUT radioactive detectors. The detectors are halogen filled Geiger-Muller counter tube and will be used to see how much radiation local outcrops of black organic shale emit. A lead cavity has been built in house to calibrate the Gamma-Scout using a CS-137 source. We ran the Gamma-Scouts for two hours and collected data in ten minute intervals to obtain preliminary calibrating constants for each of the nine detectors.

Project Dissemination:

2019 Celebration of Student Scholarship, poster presentation.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Howard, Madison

Major:

Professional Physics and Mathematics

Faculty Mentor:

Jennifer Birriel

Research/Project Title:

Documenting Night Sky Brightness in Central and Eastern KY in the LRGB Color Bands

Project Abstract/Summary:

The use of artificial light at night is fundamentally altering the spectral signature of the night sky. In the past, both high and low pressure sodium light fixtures emitted mostly in the middle of the spectrum with strong yellow emission. Newer, more energy efficient LED lighting emits more strongly in the blue end of the spectrum; blue light scatters more effectively than shorter wavelength light. Therefore, the spectral signature of the night sky is being significantly altered and both glare and sky glow are expected to increase with increased use of LED lighting. We will use two sets of portable detectors consisting of a bank of four datalogging Unihedron Sky Quality Meters to measure the spectrum of the night sky at various locations in Kentucky. Our experimental setup will measure the brightness of the night sky in the clear (L), red (R), green (G), and blue (B) filter bands simultaneously at a dark sky site and a site with artificial illumination. Before deploying our detectors, we first need to do an intercomparison between both sets of detectors. Here, we discuss our early efforts and future plans.

Project Dissemination:

Howard, Madison R. and Birriel, Jennifer J. (2019, April). *Documenting Night Sky Brightness in Central and Eastern KY in the LRGB Color Bands,* Celebration of Student Scholarship, Morehead, KY, April, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Jones, Nathan

Major:

Astrophysics

Faculty Mentor:

Jennifer Birriel

Research/Project Title:

Reviving a Vintage “Dynamo” for Use in a Lab

Project Abstract/Summary:

The “Principles of the Dynamo” lab is a vintage Cenco laboratory experiment, it demonstrated the fundamentals of AC generators and also emphasized basic graphical analysis. The original lab used a dynamo and a sensitive galvanometer. Galvonometers are analog devices for measuring current with a needle that swings against a background scale. When measuring a transient electrical current produced by a dynamo, reading errors in the data collecting process can be large. To mitigate this and to give the students experience working with modern data collection, we replace the galvanometer with a Vernier instrument amplifier and current sensor. The modified experiment functions as expected, but more modifications can be made to the experiment and lab write-up to improve user experience.

Project Dissemination:

President at the Kentucky Association of Physics Teachers meeting in March 2019 and at the Celebration of Student Scholarship in April of 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Lewis, Dalton

Major:

Engineering Physics

Faculty Mentor:

Ignacio Birriel

Research/Project Title:

The Forces Applied in Football

Project Abstract/Summary:

This project, which started in January of 2019, will investigate the use of Vernier Wireless Dynamic Sensor System (WDSS) and Tracker software to measure the magnitudes of the accelerations from the “hits” at the line of scrimmage in football. A preliminary experiment with two MSU offensive linemen and with 5 man blocking sled made by Rogers was conducted. They each hit the sled 3 times on the same pad as if they were hitting a defensive lineman. Due to the punching motion of the offensive linemen and the orientation of the pad, only the x and z axes were analyzed. The “get off and punching” motion of an offensive lineman requires the hips to be low and explode out and up to create a more powerful angle.

Project Dissemination:

2019 Celebration of Student Scholarship, poster presentation.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Matthews, Donald

Major:
Applied Physics

Faculty Mentor:
Kevin Adkins

Research/Project Title:
Gender Inequality in MSU's MPATE Rotational Physics Device

Project Abstract/Summary:
At Morehead State University, we redesigned a device used during our annual Mathematics, Physics and Advanced Technology Exploration (MPATE) Day. The device is intended to give students a hands-on activity demonstrating the interaction between kinematic and rotational motion and stimulate interest and understanding in introductory physics class environments. This study investigated the gender inequality of the construction of the device. It was found that there was a bias in the construction of the device. This semester a preliminary investigation into a solution to eliminate that bias began. The goal for the future is to improve the device's design to leverage bias against the rate of successful ball tosses. The first step in striking this balance is collecting additional data that will help guide the design modifications.

Project Dissemination:
Matthews, D.S., Adkins, J.K. and Birriel, I. (2019, March). *Gender Inequality in MSU's MPATE Rotational Physics Device*, 2019 Kentucky Association of Physics Teachers (KAPT) Annual Meeting, Louisville, Kentucky, March 2019.

Matthews, D.S., Adkins, J.K. and Birriel, I. (2019, April). *Gender Inequality in MSU's MPATE Rotational Physics Device*, Celebration of Student Scholarship, Morehead, Kentucky, April 2019.

Awards and/or Honors:
N/A

Post-Graduation Plans (Seniors only):
N/A

DEPARTMENT OF PSYCHOLOGY

Capps, Shanea

Major:
Psychology

Faculty Mentor:
Shari Kidwell

Research/Project Title:
Association of Child Emotion Understanding and Emotion-Related Behavior During a Delay of Gratification Task

Project Abstract/Summary:
Emotion understanding is an integral first step in the process of regulating emotions adaptively We examined the association between children's emotion understanding and their behavior during a frustrating task. We hypothesized that higher levels of emotion understanding would be associated with better-regulated behavior during the task. Thirty-five families participated in this phase of data collection, which was part of a larger, longitudinal study. Children averaged 6 years of age. A coding scheme for child behavior was developed based upon a combination of qualitative observation of the data and published literature on emotion regulation and attachment behavior. Child behaviors during the delay task were rated for presence/absence every 15 seconds of the 7-minute task. We rated noncompliance, false positive affect, hyperactivity, and physical avoidance of parent. Previous coders rated child affective displays during the task at 15 second intervals, based upon Silk (2006). Emotion understanding was rated by other coders in a task that focused on children's experience of six emotions, with the 4 point ratings added together to indicate a total emotion understanding score. Results indicated that our hypothesis was generally supported. Children with higher understanding of their emotions showed less anger, sadness, avoidance, and noncompliance while they waited. Children who showed both anger and sadness were more likely to display greater noncompliance during the delay. Children with greater false positive affect, who were noted to smile or laugh directly after their parent had done something insensitive, had been rated by previous coders as having greater "joy." The latter finding in particular reveals the subtlety of identifying parent-child relationship and, potentially emotion regulation, challenges. These results have important implications for understanding both children's internalizing (i.e., sad or anxious) and their externalizing, disruptive behavior.

Project Dissemination:

Shanea C. Rachael F**.** & Kidwell, S.L. (March, 2019), *Association of Child Emotion Understanding and Emotion-Related Behavior During a Delay of Gratification Task,* Poster presentation, Kentucky Psychological Association, Asbury University, Asbury, KY.

Shanea C. Rachael F., & Kidwell, S.L. (April, 2019), *Association of Child Emotion Understanding and Emotion-Related Behavior During a Delay of Gratification Task,* Poster presentation, Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Shanea will be attending the Master of Public Administration Program at Morehead State University. She will be continuing and refining her research. Notably, her identification of false positive affect and how to assess it is a hugely important contribution to our study; thus, Shanea will be involved in both training others and in publication efforts.

Crowe, Jordan

Major:

Psychology

Faculty Mentor:

Gregory Corso

Research/Project Title:

Factors of Acceptance of Autonomous Vehicles

FDA Labeling, Testing and Consumer Input

Project Abstract/Summary:

This was an investigation into the factors of acceptance of autonomous vehicles, including underlying factors, and correlations between propensity towards acceptance and correlations with demographics and personality types.

This was an investigation into the usability and effectiveness of proposed changes to over the counter medication labels with the addition of user input.

Project Dissemination:

Jones, V., **Crowe, J.**, Young, S., Childers, M., Beckett, K. (2019, April). *Correlates of Acceptance of Autonomous Vehicles.* Oral presentation, Celebration of Student Scholarship, Morehead, KY.

Crowe, J., Beckett, K. Childers, M., Young, S., Jones, V. (2019, April). *Medication Labeling and Consumer Needs.* Oral presentation, Celebration of Student Scholarship, Morehead, KY.

Jones, V., Crowe, J*.,* Young, S., Childers, M., Beckett, K. & Corso, G.M. *Public Acceptance of Autonomous Vehicles: An Unanswered Question.* Oral Presentation, 44th Annual Carolinas Psychology Conference. Campbell University, Buies Creek, NC.

Crowe, J., Jones, V., Young, S., Childers, M., Beckett, K., & Corso, G.M. (2019, April). *FDA Regulations and Consumer Input*. Oral Presentation, 44th Annual Carolinas Psychology Conference. Campbell University, Buies Creek, NC.

Crowe, J., Jones, V., Lush, E., Young, S., Mohr, A., & Corso, G.M. (2019, Mar). *Medication Labeling and Consumer Needs*. Poster presentation at SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Young, S., Crowe, J., Jones, V., Lush, E., Mohr, A., & Corso, G.M. (2019, Mar). *The Influence of Personality Characteristics on Trust of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Jones, V., Lush, E., Crowe, J., Mohr, A., Young, S., & Corso, G.M (2019, Mar). *To Accept or Not: An Investigation of the Underlying Factors of Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Mohr, A., Young, S., Lush, E., Jones, V., Crowe, J., & Corso, G.M. (2019, Mar). *The Relationship between Demographic Background and Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Crowe, J., Lush, E., Jones, V., Mohr, A., Young, S., & Corso, G.M. (2019, Feb). *FDA Labeling and Consumer Effects. Poster presentation*. Posters at the Capital, Frankfort, KY. Jones, V., Lush, E., Crowe, J., Mohr, A.,

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

Will be attending University of Louisville, School of Law.

Jones, Vanessa

Major:

Psychology

Faculty Mentor:

Gregory Corso

Research/Project Title:

Factors of Acceptance of Autonomous Vehicles
FDA Labeling, Testing and Consumer Input

Project Abstract/Summary:

This was an investigation into the factors of acceptance of autonomous vehicles, including underlying factors, and correlations between propensity towards acceptance and correlations with demographics and personality types.

This was an investigation into the usability and effectiveness of proposed changes to over the counter medication labels with the addition of user input.

Project Dissemination:

Jones, V., Crowe, J., Young, S., Childers, M., Beckett, K. (2019, April). *Correlates of Acceptance of Autonomous Vehicles.* Oral Presentation, Celebration of Student Scholarship, Morehead, KY.

Crowe, J., Beckett, K. Childers, M., Young, S., Jones, V. (2019, April). *Medication Labeling and Consumer Needs.* Oral Presentation, Celebration of Student Scholarship, Morehead, KY.

Jones, V., Crowe, J*.,* Young, S., Childers, M., Beckett, K. & Corso, G.M. *Public Acceptance of Autonomous Vehicles: An Unanswered Question.* Oral Presentation, 44th Annual Carolinas Psychology Conference. Campbell University, Buies Creek, NC.

Crowe, J., Jones, V., Young, S., Childers, M., Beckett, K., & Corso, G.M. (2019, April). *FDA Regulations and Consumer Input*. Oral Presentation, 44th Annual Carolinas Psychology Conference. Campbell University, Buies Creek, NC.

Crowe, J., Jones, V., Lush, E., Young, S., Mohr, A., & Corso, G.M. (2019, Mar). *Medication Labeling and Consumer Needs*. Poster presentation at SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL

Young, S., Crowe, J., Jones, V., Lush, E., Mohr, A., & Corso, G.M. (2019, Mar). *The Influence of Personality Characteristics on Trust of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL

Jones, V., Lush, E., Crowe, J., Mohr, A., Young, S., & Corso, G.M (2019, Mar). *To Accept or Not: An Investigation of the Underlying Factors of Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Mohr, A., Young, S., Lush, E., Jones, V., Crowe, J., & Corso, G.M. (2019, Mar). *The Relationship between Demographic Background and Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Crowe, J., Lush, E., Jones, V., Mohr, A., Young, S., & Corso, G.M. (2019, Feb). *FDA Labeling and Consumer Effects. Poster presentation*. Posters at the Capital, Frankfort, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Meade, Kimberly

Major:

Psychology

Faculty Mentor:

Shari Kidwell

Research/Project Title:

A Blast from the Past: Parent's Insightfulness and Sensitivity about their Teenager's Experience of a Dyadic Reminiscing Task

Project Abstract/Summary:

Parental reflective functioning (RF) assesses the capacity to understand mental states in one's child (Slade et al., 2005). While researchers have found RF to be associated with observed parenting behavior, few have examined these constructs beyond early childhood. This study evaluates parent's RF and sensitivity amongst 21 families of 16-year olds, as part of a larger, longitudinal study. Sensitivity was measured using a nine-point scale applied to a dyadic reminiscing task based upon coding schemes by Kobak (2017) and Biringen (2000). Specifically, sensitivity ratings were made of parents and teens discussing a video of themselves playing in the lab 12 years prior. Parents were subsequently asked to describe their child's thoughts and feelings during the discussion, based on Koren-Korie and Oppenheim's Insightfulness Assessment interview procedure (2001). RF was rated from these interviews on a 7-point scale, which was developed for the study based upon a coding scheme by Slade (2005). Our results supported our hypothesis that parents with higher reflective functioning tended to engage in more sensitive behavior with their teens during the dyadic reminiscing task. This research was supported by MSU Undergraduate Research Fellowships and by MSU RCPC and KY NSF grants.

Project Dissemination:

Meade, K.B., Osborn, K., Lentz, A., Turner, M., Brown, M., & Kidwell, S.L. (2019). *A Blast from the Past: Parent's Insightfulness and Sensitivity about their Teenager's Experience of a Dyadic Reminiscing Task*. Kentucky Psychological Association. Wilmore, KY.

Meade, K.B., Osborn, K., Lentz, A., Turner, M., Brown, M., & Kidwell, S.L. (2019). A Blast from the Past: Parent's Insightfulness and Sensitivity about their Teenager's Experience of a Dyadic Reminiscing Task. Celebration of Student Scholarship. Morehead, KY.

Awards and/or Honors:

Certificate of Merit, Undergraduate Poster Presentation Competition, Celebration of Student Scholarship, April 2019.

Post-Graduation Plans (Seniors only):

Kimberly will be attending the MS Clinical Psychology Program at Morehead State University. She will be continuing and refining her research on reflective functioning, an essential construct in our study. Kimberly will be involved in publication efforts as well.

Rice, Hannah

Major:

Psychology

Faculty Mentor:

Shari Kidwell

Research/Project Title:

Parental Reflective Functioning: Associations with Adolescent Internalizing Symptoms

Project Abstract/Summary:

Parental reflective functioning (RF) is the ability to understand children's behavior in terms of underlying mental states (Slade et al., 2005). RF has a demonstrated relationship with young children's attachment, but less is known about RF pertaining to older children or about its import outside of the parent-child relationship. This study assessed RF in the parents of 21 families when the children were 16 years of age, as part of a larger, longitudinal study. Specifically, a 7-point scale was used to rate RF in an interview in which parents discussed times they and their teen experienced the emotions of sadness and anger. The scale was based upon a coding scheme by Slade (2005), modified for this project.

Children's internalizing symptoms (i.e., depression and anxiety) were assessed by both teen self-report and parent-report using the Child Behavior Checklist (CBCL: Achenbach & Rescorla, 2001). We predicted lower parental reflective functioning would coincide with higher adolescent internalizing symptoms. Our results didn't support this hypothesis, which may have been due to low statistical power and defensiveness or disagreement about teen symptom. Interestingly, however, we found that the sample, on the whole, is scoring in the at-risk range in the following ways: a) the typical parent in the study received an RF score of 3, which is below the average in the literature and suggestive of problems knowing what their teen is experiencing; and b) one-third of the teens reported clinically significant levels of internalizing problems. Thus, continuing to understand a potential role for low RF, along with other risk factors, will be important. This research was supported by an MSU Undergraduate Research Fellowship and by MSU RCPC and KY NSF grants.

Project Dissemination:

Rice, H., Mayhaus, R., Kidwell, S.L., Huffman, S., Ginn, K., Thomas, B., & Perkins, J. (March, 2019). Parental Reflective Functioning: Associations with Adolescent Internalizing Symptoms. Poster presentation, Kentucky Psychological Association, Asbury, KY.

Rice, H., Mayhaus, R., Kidwell, S.L., Huffman, S., Ginn, K., Thomas, B., & Perkins, J. (April, 2019). Parental Reflective Functioning: Associations with Adolescent Internalizing Symptoms. Poster presentation, Morehead State University's Celebration of Student Scholarship, Morehead, KY.

Awards and/or Honors:

Hannah has been accepted into Morehead's Master of Science in Clinical Psychology graduate program. She will be continuing and refining her research on reflective functioning, an essential construct in our study. Hannah will be involved in publication efforts as well.

Post-Graduation Plans (Seniors only):

N/A

Turner, Madison

Major:

Psychology

Faculty Mentor:

Shari Kidwell

Research/Project Title:

Does Wealth = Sensitivity?: Connections Between Financial Stress and Parenting Behavior

Project Abstract/Summary:

Parental sensitivity is an extremely important aspect of healthy parent-child relationships, but research suggests it may be decreased when families experience chronic financial stress. We examined this question amongst 21 families returning for the last phase of a longitudinal family project. Parents completed a comprehensive demographic questionnaire, including rating how frequently and intensely they worried about their financial situation. In order to examine the influence of low SES and environmental stress, eight variables were composited into an index of socioeconomic risk according to theoretical and psychometric guidelines (Rushton, Brainert, & Pressley, 1983). Parents and teens also watched and discussed a video of themselves playing together 12 years prior. We developed rating scales for parenting sensitivity and hostility, based upon scales by Biringen (et al. 2000) and Kobak (2017). The former rating scheme is for young children and their parents. Notably, only Kobak and a handful of other researchers have investigated sensitivity through observations of teens and parents. Our results supported the hypothesis in that both aspects of parenting quality were associated in the expected direction with socioeconomic risk. However, our experience was that measuring sensitivity in this age group is challenging. We plan to refine our scales and to particularly consider dyadic qualities of the interaction, for example, how teens may set aside their discomfort or embarrassment to create a sense of harmony that pleases their parents.

Project Dissemination:

Turner, Madison R. Lentz, Angela and Dr. Shari Kidwell. (2019, April). *Does Wealth = Sensitivity?: Connections between financial stress and parenting behavior,* poster, Celebration of Student Scholarship, Morehead, KY, April, 2019.

Turner, Madison R. Lentz, Angela and Dr. Shari Kidwell. (2019, March). *Does Wealth = Sensitivity?: Connections between financial stress and parenting behavior,* poster, Kentucky Psychological Association Annual Meeting at Asbury University, March, 2019.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Wright, Shelby

Major:

Psychology

Faculty Mentor:

Shari Kidwell

Research/Project Title:

Emotion-Related Processes Amongst At-Risk, Rural Adolescents

Project Abstract/Summary:

Mindfulness is a state of openness, acceptance, and awareness in which aversive thoughts and feelings are experienced. Cognitive-behavioral therapies, including Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 2012), utilize mindfulness and related techniques for changing awareness and attitudes towards these experiences. The current study examines the association of adolescent's awareness and acceptance of sadness and anger, with low acceptance equated to roughly either avoiding such feelings or becoming dysregulated by them. As part of a larger longitudinal study, 21 adolescents ranging from 16-18 years (9 female), were assessed for mindful acceptance-related concepts using 2 questionnaires. They were also interviewed intensively about their experiences with sadness and anger. This interview was coded for indicators of accepting and adaptive attitudes towards these emotions, using a series of 11 5-point scales. We predicted that teens observed to have high awareness, acceptance, and adaptive regulation of sadness and anger would self-report higher levels of mindfulness and lower levels of emotional dysregulation. Our hypothesis was partially supported. Although the mindful acceptance scale was not associated with our interview ratings, the dysregulation scale was associated with interview ratings. This suggests a complex relationship between our variables of interest; however, our interview ratings appear to have some preliminary validity, at least as related to dysregulation when sad or angry. Future research will further examine how teens view their parent's emotions and their parents and peers' response to their own emotions. This research was supported by an MSU Undergraduate Research Fellowship and by MSU RCPC and KY NSF grants.

Project Dissemination:

Wright, S.R., Blanton, C., Hamm, A.N., & Kidwell, S.L. (2019, April). Emotion-related Processes Amongst At-risk, Rural Adolescents. Poster presentation, Celebration of Student Scholarship, Morehead, KY.

Hamm, Ashley N., McDevitt, A.N., Blanton, C., Wright, S., & Kidwell, S.L. (2019, April). Associations of Childhood Trauma and Adolescent Acceptance of Negative Emotions. Poster presentation, Celebration of Student Scholarship, Morehead, KY.

McDevitt, A.N., Hamm, A.N., Wright, S., Blanton, C., & Kidwell, S.L. (2019, March). Associations of Childhood Trauma and Adolescent Acceptance of Negative Emotions. Poster presentation, Kentucky Psychological Association, Asbury, KY.

Awards and/or Honors:

Ashley Hamm earned a Certificate of Merit for her poster at Celebration of Student Scholarship. Shelby's interview ratings served as her dependent variable.

Post-Graduation Plans (Seniors only):

N/A

Young, Sydney

Major:

Psychology

Faculty Mentor:

Gregory Corso

Research/Project Title:

FDA Medication Labeling: Consumer Reception of Over-the-Counter Medication Labeling

Trust towards Autonomous Vehicles

Project Abstract/Summary:

FDA: The purpose for this study was to investigate consumer perception of medication labels and consumer reception of label information with and without regions of highlighted information. Participants were MSU Intro Psychology students. It was found that users place a high value on the categories of active ingredient, drug name, and drug purpose. Ongoing research is evaluating participant response times and accuracy on multiple choice questions regarding information when it is presented on a mock label inside a highlighted region, outside of a highlighted region, and when the label does not contain a highlighted region.

Auto: An investigation into possible relationships between personality characteristics, demographics, and trust toward autonomous vehicles (self-driving cars). In order to conduct our study, we administered a demographic survey, Big Five Inventory, and Self-driving Car Acceptance Scale (SCAS) to participants via Amazon Mechanical Turk. Twelve significant correlations resulted from a correlation analysis between individual participant responses on sub-categories on the SCAS and individual participant scores for personality traits assessed with a Big Five Inventory. The strongest correlations appeared between Agreeableness x Experience with automation (r (83) =.358) and Conscientiousness x Experience with Automation (r (83) =.344). Our results also showed that higher education was significantly negatively correlated with appropriateness of automation while level of income was significantly positively correlated with appropriateness of automation.

Project Dissemination:

Jones, V., Crowe, J., Young, S., Childers, M., Beckett, K. (2019, April). *Correlates of Acceptance of Autonomous Vehicles.* Oral Presentation, Celebration of Student Scholarship, Morehead, KY.

Crowe, J., Beckett, K. Childers, M., Young, S., Jones, V. (2019, April). *Medication Labeling and Consumer Needs.* Oral Presentation, Celebration of Student Scholarship, Morehead, KY.

Crowe, J., Jones, V., Lush, E., Young, S., Mohr, A., & Corso, G.M. (2019, Mar). *Medication Labeling and Consumer Needs.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Young, S., Crowe, J., Jones, V., Lush, E., Mohr, A., & Corso, G.M. (2019, Mar). *The Influence of Personality Characteristics on Trust of Autonomous Vehicles.* Poster presentation at SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Jones, V., Lush, E., Crowe, J., Mohr, A., Young, S., & Corso, G.M (2019, Mar). *To Accept or Not: An Investigation of the Underlying Factors of Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Mohr, A., Young, S., Lush, E., Jones, V., Crowe, J., & Corso, G.M. (2019, Mar). *The Relationship between Demographic Background and Acceptance of Autonomous Vehicles.* Poster presentation, SEPA (CEPO/Psi Chi Undergraduate Poster Session). Jacksonville, FL.

Crowe, J., Lush, E., Jones, V., Mohr, A., Young, S., & Corso, G.M. (2019, Feb). *FDA Labeling and Consumer Effects.* Poster presentation, Posters at the Capital, Frankfort, KY.

Jones, V., Lush, E., Crowe, J., Mohr, A., Young, S., & Corso, G.M (2018, Nov). *User Acceptance of Automated Vehicles.* Poster presentation, Kentucky Academy of Science, Western Kentucky University, Bowling Green, KY.

Awards and/or Honors:

N/A

Post-Graduation Plans (Seniors only):

N/A

Student Index